THE

LARYNGOSCOPE.

VOL. XXVIII. ST. LOUIS, OCTOBER, 1918. No. 10.

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

CONDITIONS DEVELOPING IN CHRONIC SUPPURATIVE OTITIS MEDIA WHICH SHOULD CONSTITUTE THE BASIS FOR EXEMPTION FROM MILITARY SERVICE.*

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Chronic suppurative otitis media is, as we know, an exceedingly dangerous condition. Some years ago I collated from the reports of the New York Eye and Ear Infirmary 19,000 cases of middle ear suppuration, both acute and chronic. Out of these 19,000 cases, one in every eighty-eight suffered from some intracranial lesion, either epidural abscess, sinus thrombosis, brain abscess, or meningitis. These figures, I think, demonstrate sufficiently the seriousness of the condition under consideration.† It is also a well known fact that for many years insurance companies have rejected for insurance all applicants with chronic middle ear suppuration, or, if they have accepted them, have taken them only at a very high rate, showing that the statistics of the actuary's department had fully recognized the gravity of this condition.

From a practical point of view it is best to study all cases of suppurative otitis media from the symptomatic point of view, and from the information that can be obtained upon physical examination. We may classify the symptoms as those where there is a constant profuse discharge, a constant slight discharge, an intermittent discharge, and in the fourth place those cases where in spite of

†Medical News, October 17, 1903.

*Read before the American Otological Society, May 29, 1918.

the condition, the patient states there is no discharge from the ear. From a military point of view those cases suffering from a constant profuse discharge should naturally be rejected for general military service. The fact that the patient has a profusely discharging ear not only constitutes a menace to intracranial complication, but also renders the subject disagreeable to those with whom he will be thrown in contact. The necessity, moreover, of giving attention to the condition by irrigation of the ear, or cleansing the ear several times a day by other methods, would naturally detract from his usefulness as a soldier, and render him unfit for general military service. This would not apply, however, to his usefulness in some special line of military service as we find that most of these patients have been able to carry out their vocations, and to earn a livelihood.

Cases where there is a slight discharge naturally would not be disagreeable to those about them, although the menace to their life from intracranial complications would be equally great. I think that we might say from the beginning that the amount of the discharge and its character gives very little real information as regards the actual danger to which the patient is subjected. Some of the worst cases which I have seen have been those in which the discharge has been either very slight, and in some cases where the patient was not conscious that there was any discharge from the ear.

Aside from the discharge, certain general symptoms dependent upon the condition may be present. The most serious of these is, I think, occasional attacks of vertigo of which some of these patients complain. The other symptom is persistent headache. In any case of purulent otitis media where these symptoms are complained of, and where these symptoms seem to be dependent upon the condition of the middle ear, general military service should be forbidden. These remarks, of course, presuppose that the condition is allowed to remain as it exists at the time of examination, and they do not regard the possible reconstruction of these cases which we will deal with later.

Exemption from military service on account of impairment of hearing due to the condition is naturally governed by the same rules which apply to cases in which no suppuration exists.

A word might be said about those cases in which we have an intermittent discharge from the ear. In these cases we ordinarily have a history of discharge from the ear whenever the patient suffers from a cold in the head. These cases can always be accepted

for limited military service, and can, I believe, in many instances without danger either to the Government or to the patient be accepted for general military service. We frequently find in these cases where there is a history of intermittent discharge that attention to the upper air tract and to the removal of obstructive lesions here will cure the case completely.

I am in the habit of classing all cases of middle ear suppuration under six heads. First, cases of small central perforation. In these cases there is usually a history of intermittent discharge. The condition is seldom serious, and is usually easily relieved by local treatment.

Second, cases of large kidney shaped perforation, without caries of the ossicles, and with the mucous membrane of the middle ear either dry or moist. Where the mucous membrane is dry and dermitized, the condition is a residual one, and constitutes no menace to life, and the patient is perfectly fit for military duty, provided the hearing comes up to the standard prescribed by the Government.

Incidentally, it might be remarked that this standard of hearing might, I think, be modified with advantage. According to the present standard the patient must have at least 10/20 hearing for the voice in each ear for general military service. I, personally, believe that a patient with 5/20 or less in one ear, and perfectly normal hearing in the opposite ear is perfectly competent for general military service. But this is a digression.

The third form of perforation with which we have to deal is the large kidney shaped perforation with the presence of granulation tissue. In these cases we always have profuse discharge. The presence of granulation tissue may mean one of two things, either carious bone in the tympanic cavity, or lack of cleanliness. Cases of this kind should, in my mind, be accepted for observation. The patient should be put in the hospital, and the granulation tissue removed, and the ear kept clean by irrigation. If at the end of a couple of weeks these ears become dry, the case becomes then a case of large kidney shaped perforation with a dry ear, or with an ear from which there is only a slight discharge. Depending. then, upon the degree of hearing, this case can be accepted for general military service, or limited military service.

The fourth class of cases is those in which we have a perforation in the upper posterior portion of the membrana tympani with a sinus leading into the tympanic vault. The remainder of the drum membrane may be somewhat thickened, but frequently re-

mains perfectly normal. The lower margin of the perforated drum membrane has become adherent to the internal tympanic wall, while the epithelium of the drum membrane has spread over the internal tympanic wall. In these cases we usually have a history of only very slight discharge, or frequently of no discharge at all. On examining the case we frequently find a dark brown crust covering the perforation, and extending out for a considerable distance on the posterior wall of the canal. These cases, I think, are the most dangerous with which we have to deal. The spreading inward of the epithelium constitutes a cholesteatomatus condition in the tympanic vault. These cases are, incidentally, prone to develop intracranial symptoms, and should not be accepted for general military service unless reconstruction is made, that is, unless the case is subjected to the radical operation. This subject will be dealt with later.

The fifth variety of perforation is complete destruction of the drum membrane, with sinuses leading in front and behind the short process of the malleus into the tympanic vault. If these cases are dry, they should be accepted for general military service, provided the hearing is adequate to pass the test. With even a slight discharge here, however, these cases should be rejected for general military service unless reconstruction is permitted. In these cases the internal tympanic wall is almost always dermitized, and, if the ear is dry, they represent cases of spontaneous cure. The dermitization of the internal wall of the middle ear, however, renders the development of cholesteatoma of the vault exceedingly common, and, if this condition is present, as evidenced by slight discharge, they should not be accepted for general military service without reconstruction. For limited military service at home, I think that some of these cases may be accepted, but, then, only after reconstruction.

The sixth variety which presents itself is a case in which we have a small perforation through the membrant flacida without the presence of granulation tissue. This condition is always indicative of intratympanic caries, and such a registrant should not be accepted for military service without reconstruction. This applies to all cases whether the discharge is constant, intermittent, profuse, or scanty. In other words, this condition is an exceedingly dangerous one, and one exceedingly liable to be followed by intracranial complications.

Considering the character of the discharge, I do not place much importance on this. The discharge may be sero-mucous, muco-

purulent, or purulent. Naturally, if the discharge is purulent and profuse, we look upon the condition as serious, but we may not regard the sero-mucous, or the muco-purulent discharge as devoid of danger. The character of the discharge, then, aids us but little in arriving at an opinion as to whether the patient should be accepted for military service or not, and the real opinion should be formed on speculum examination.

I have stated in describing the various varieties of perforation the relative danger of intracranial involvement in each. Certain types, as I have already remarked, are not very prone to intracranial involvement, while other types are exceedingly prone to some such complication. No type, however, is free from this danger. I can recall at least one instance in which a patient presented with a large kidney shaped perforation showed but slight discharge, and apparently no possibility of any interference with drainage. I advised against any interference in this case, yet the patient died a few months later from meningitis. While certain types of suppurative otitis media, therefore, are very apt to be followed by intracranial complications, no type is absolutely free from this possibility, and this must always be borne in mind.

The presence of labyrinthine symptoms in any case of suppurative otitis should, I think, constitute a basis for exemption. This would apply to all cases excepting those in which there was total deafness, a dead labyrinth, a dry ear, and in which the rotation test showed that compensation had completely taken place. A total deafness on one side would, according to the present rules, exempt the patient from serving except in limited military service, and for this service he would certainly be competent. The reconstruction of cases with active labyrinthine symptoms will be dealt with later.

The impairment of hearing as the result of suppurative otitis media has already been spoken of, and should be governed by the same rules which apply to non-suppurative cases. In other words, the impairment of hearing due to suppuration is no more a cause for exemption than a similar degree of impairment of hearing due to a non-suppurative lesion. As before stated, I believe that the rules governing the acceptance of subjects to the draft based upon their hearing needs revision.

We now come to the question of reconstruction in these cases. Personally, I cannot too strongly urge the reconstruction of all cases of suppurative otitis media by radical operation occurring in patients who are otherwise fit for military service. I have already

spoken of the removal of granulation tissue, and an attempt at obtaining a dry ear after its removal. I have also mentioned the reconstruction of those cases where the suppuration seems to be caused by nasal obstruction. These cases, however, constitute but a comparatively small number of those which have so far been rejected for military service. I believe that every case of unilateral suppuartive otitis media coming before us, and where the discharge from the ear is alone the cause of rejection, should be subjected to the radical operation. Accumulated statistics on the result of radical operation at competent hands has shown that this operation is as free from danger as any operation in surgery. If the most improved methods of technique are employed, that is, if the primary graft is used in every case where possible, the period of convalescence in the hospital will seldom be over three weeks, and often not over two. These cases, then, go out, and perfectly fit for general military service. It may be stated with truth that in a certain small proportion of these cases there will be a slight mucous discharge from the ear from the region of the tube. This only occurs in a very small proportion of cases subjected to the radical operation. It must be remembered that this discharge coming from the region of the tube constitutes no menace to the patient's life, and that it is not profuse enough to make him an object of disgust to those with whom he is brought in contact. It requires no more attention at the hands of the patient than does the washing of his face and hands. Moreover, the effect upon the hearing in some of these cases is marvelous. I have seen cases without number subjected to the radical operation where the hearing has been greatly improved as the result of this procedure. I have many cases where it remained the same as before operation, and I have seen very few cases where the hearing has been made worse. These facts are of particular significance in that they give the Government the right to exact the reconstruction of these patients for military service in that it subjects them to practically no risk either to life or to function.

I should make the same recommendation in regard to those cases where certain labyrinthine symptoms exist. These patients demand operative interference because their condition is one which constitutes a menace to life. These operations are ordinarily successful, and, if successful, the patient at once becomes a valuable military asset.

In cases of double suppurative otitis media this question of reconstruction naturally becomes more grave. Here, I believe, that

an operation should be perfomed first upon the poorer ear, and, if this is successful, the other ear should be operated upon. In this way these applicants would at least be available for limited military service. The great argument in favor of reconstruction is this: It removes permanently the danger of intracranial complications, and puts the patient in a better condition than he was before. He is then able to fulfill his obligations to his country usually in a general military capacity, but always in the capacity of limited military service.

Another point which may be well dwelt upon here is the question of where this reconstruction work should take place. I do not believe that as a rule the ordinary Base Hospital offers the ideal surroundings for these reconstruction cases. These operations demand exact technique and considerable experience upon the part of the surgeon. I believe that the Government could well make use of a large number of our public institutions scattered throughout the country where this work has been generally successful for many years, and where the technique has been perfected. The men could be sent to these hospitals for reconstruction, and afterwards returned to their respective military divisions. There are certainly an adequate number of medical men trained in this work, who are too old or whose health does not permit them to do more active work for the Government, who would be only too glad to do this work, and they would in this way, I believe, be serving their country better than by doing minor, though more active work in the regular military hospitals.

15 East 53d Street.

Epithelioma of the Ethmoid. Dan McKenzie, *Proc. Royal Soc. Med.*, Sec. Laryngol., Jan., 1918.

In this case, a woman 41 years of age, the only symptom was epistaxis of four years' duration, with ever increasing severity. Removal of the growth was accomplished by lateral rhinotomy and at the time of writing (5 months) there was no sign of recurrence either locally or in the cervical glands. Ed.

THE METHOD OF ANALYSIS OF THE BARANY TESTS IN PATHOLOGIC CASES.*

Dr. Lewis Fisher, Philadelphia, Pa.

To be able to interpret the various findings obtained by an examination of the vestibular apparatus it is essential that the data be properly recorded. It is helpful to use a special chart, such as here shown, Fig. 1—one in which all the salient features of the examination may be reviewed at a glance.

The first question that presents itself in any given case is whether we are dealing with a functional or an organic condition. If the chart shows all responses to ear-stimulation perfectly normal, a functional condition may be suspected. When the responses obtained on stimulation are not normal, the case should be considered as having an organic lesion. Such a deviation from the normal need not include *all* the responses. A definite impairment of even one response shows that we are dealing with an organic lesion.

Having concluded from a study of the chart that the case presents an actual organic involvement of some portion of the vestibular apparatus, our next problem is to determine whether the case is one of peripheral or central lesion. This is the most important and at the same time most difficult diagnosis that the otologist is called upon to make. Many cases of cerebellar lesion or tumors of the cerebello-pontile angle present symptoms similar to those observed in an affection of the labyrinth—the miscalled "Menieres" disease; on the other hand labyrinthine lesions not infrequently simulate cerebellar affections. The findings obtained on ear-stimulation are frequently the deciding factor in the diagnosis, and it therefore behooves the otologist to exercise the greatest care in determining this point. It might not be amiss to emphasize a few of the most important principles of this differential diagnosis.

In a peripheral lesion *all* the responses are impaired, and conversely the presence of any *one normal* response to stimulation indicates a normal labyrinth and VIII nerve. A spontaneous nystagmus in the vertical plane either upward or downward indicates a central lesion. If stimulation produces a "perverted" or an "inverse" nystagmus then again the lesion is central.

If the findings lead to the conclusion that the lesion is central, there presents itself the problem of locating the lesion accurately

Figure I.

TESTS OF THE VESTIBULAR APPARATUS.

Nystagmus	Spontaneous	Pointing Right	Pointing Left
Looking to Right	Shoulder from above		
Looking to Left			
Looking Up	Nystagmus Vertigo Past-pointing		
Looking Down	Falling Romberg Turning head to right Turning head to left Attempt to overthrow Goniometer		
	Turning		
To Right Amp. Duration Sec.	To Right Shoulder from above	to	to
	Nystagmus Vertigo Past-pointing Falling		
To Left Amp. Duration Sec.	To Left Shoulder from above	to	to
	Nystagmus Vertigo Past-pointing Falling		
	Caloric		
Douche Right Amp. After min. sec.	Douche Right Shoulder from above	to	to
	Nystagmus Vertigo Past-pointing Falling		
Head Back Amp.		to	to
Douche Left Amp. After min. sec.	Douche Left Shoulder from above	to	to
	Nystagmus Vertigo Past-pointing Falling		
Head Back Amp.		to	to

Figure I.

Name Age Date
Address
Referred by

DIAGNOSIS

SUMMARY

Complains of

HISTORY
Dizziness

Staggering
Deafness
Tinnitus

NOSE

THROAT

A. D.
EARS
A. S.

Fistula

Hearing Tests

A	A	Ac	Bc	n	Pol	c⁴	Galt
=		Ac	Bc	n			

within the cranium. The facility with which one is able to do this depends in a great measure upon how well he can visualize the various pathways constituting the vestibular apparatus. (Fig. 2.) The simplest method of procedure is that of elimination. We begin with the labyrinth and proceed brainward considering each

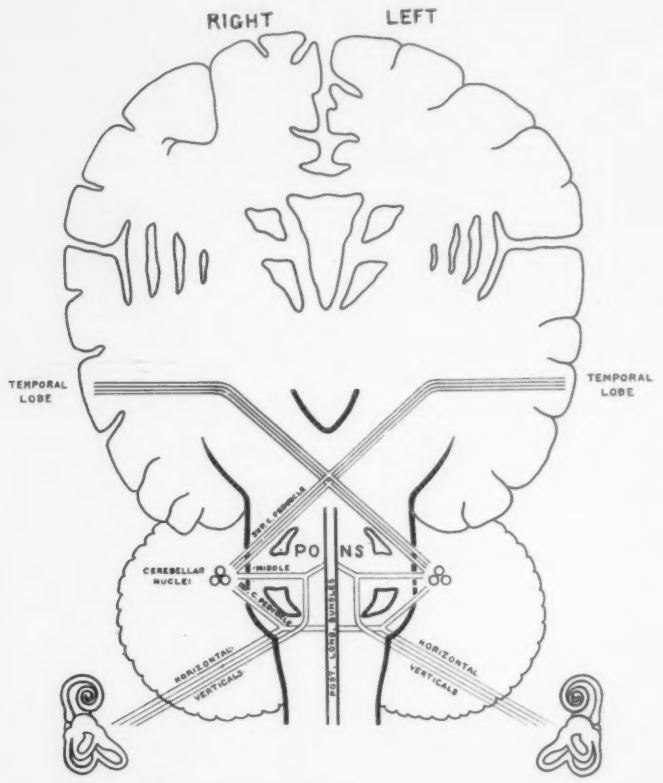

Fig. 2.

structure by itself. With good hearing and one or more normal responses obtained on stimulation of the static-kinetic portion of the labyrinth, the labyrinth itself and VIII nerve are to be considered uninvolved. For information relative to the condition of the medulla oblongata and inferior cerebellar peduncles we examine the

medulla oblongata and inferior cerebellar peduncles we examine the responses obtained on stimulation of each horizontal canal *separately*. This test is performed routinely by tilting the head back sixty degrees after douching. If this produces normal horizontal nystagmus and vertigo with past-pointing and falling, the medulla oblongata and inferior cerebellar peduncle of that side may be

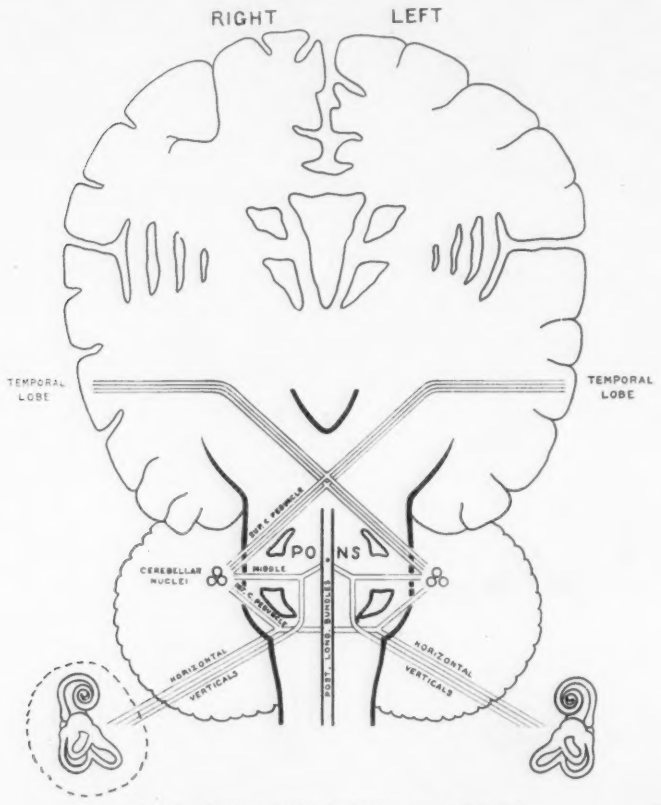

Fig. 3. Dotted circle indicates site of lesion.

considered uninvolved. To determine the integrity of the pons, we examine the responses obtained from stimulating the vertical semi-circular canals. These are tested when the ear is douched with the head thirty degrees forward—the so-called "upright" position. If the chart shows a normal rotary nystagmus with vertigo, past-

pointing and falling, it suggests uninvolved pathways in the pons and middle cerebellar peduncle of the side douched. The cerebellum is considered as not the seat of any gross lesion, if stimulation of either ear or any canal produces past-pointing of both arms in both directions.

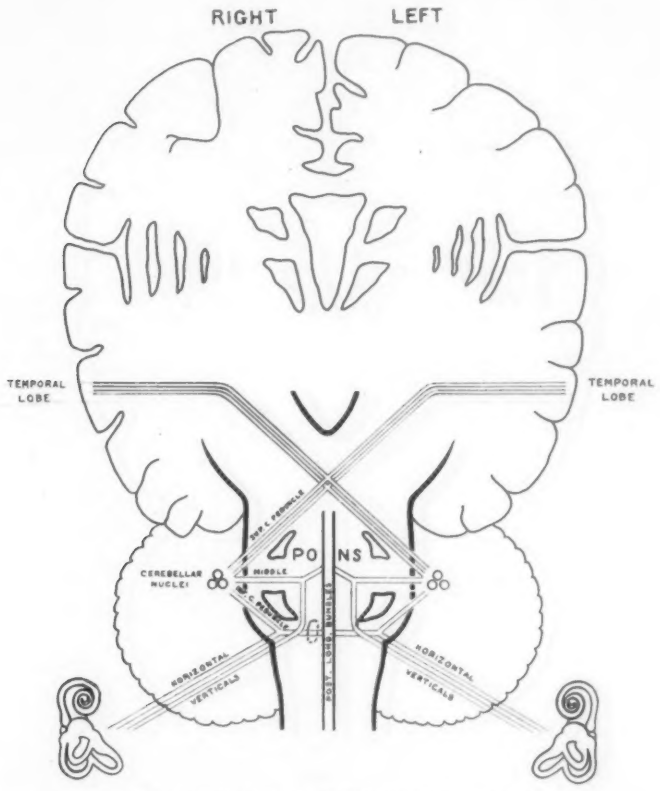

Fig. 4. Dotted circle indicates site of lesion.

With the chart critically examined in this manner and all the possible points of involvement along the nerve tracts in mind, we attempt to find *one* location which would satisfactorily account for all the impaired responses. Thus when the tests of *all* the semicircular canals of both sides produce impaired or absent vertigo

instead of accounting for the condition on the basis of multiple lesions, it is more reasonable to suppose that there is *one* lesion located at a point where *all* the fibres concerned in vestibular vertigo come together. Such a point is found at the decussation of the superior cerebellar peduncles where all of the fibres concerned

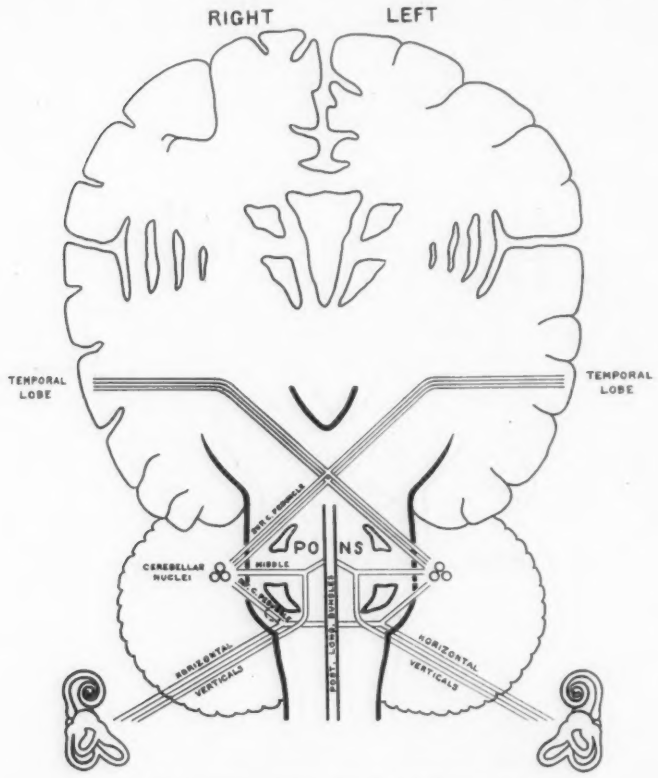

Fig. 5. Dotted circle indicates site of lesion.

in vertigo pass from the cerebellum on their way to the cerebral cortex.

Again—given a case with no responses at all from stimulation of the right ear, and an absence of responses from the vertical canals of the opposite or left ear. Instead of assuming two lesions

—one located in the right labyrinth cutting off all the responses from that side, and another lesion in the left side of the pons, it is more reasonable to explain the whole "phenomenon-complex" by one lesion in the right cerebello-pontile angle, where an involvement of the right VIII nerve by the lesion would produce no re-

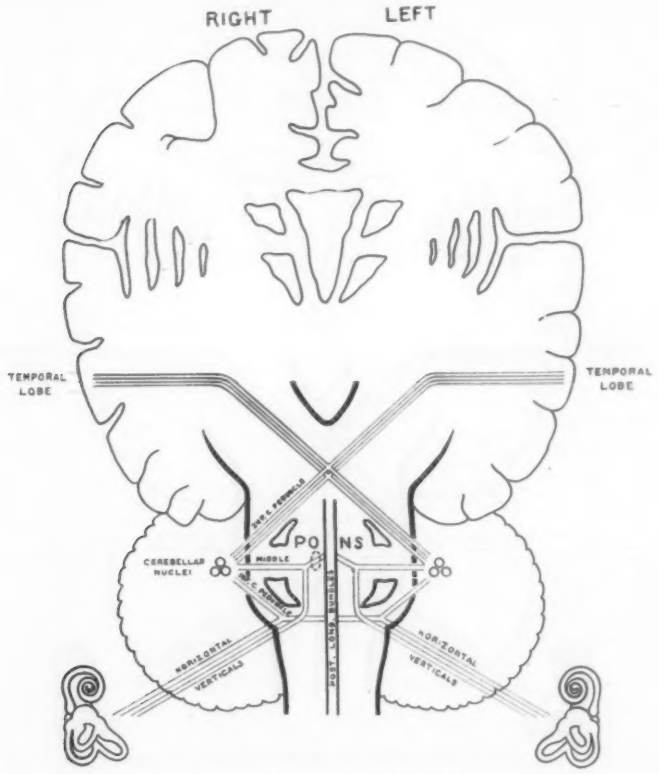

Fig. 6. Dotted circle indicates site of lesion.

sponses on stimulating the right labyrinth, and the same lesion by pressure against the brain-stem would interfere with the responses from the vertical canals of the opposite side.

Just as in neurology, a certain group of symptoms occurring with a definite lesion are spoken of as the "symptom-complex" for

with a definite lesion are spoken of as the "symptom-complex" of that lesion—in the same way we have come to recognize a certain group of phenomena obtained on stimulation as the "phenomenon-complex" for that particular lesion. The following may be helpful:

1. If the results of stimulation of the right ear are: nystagmus,

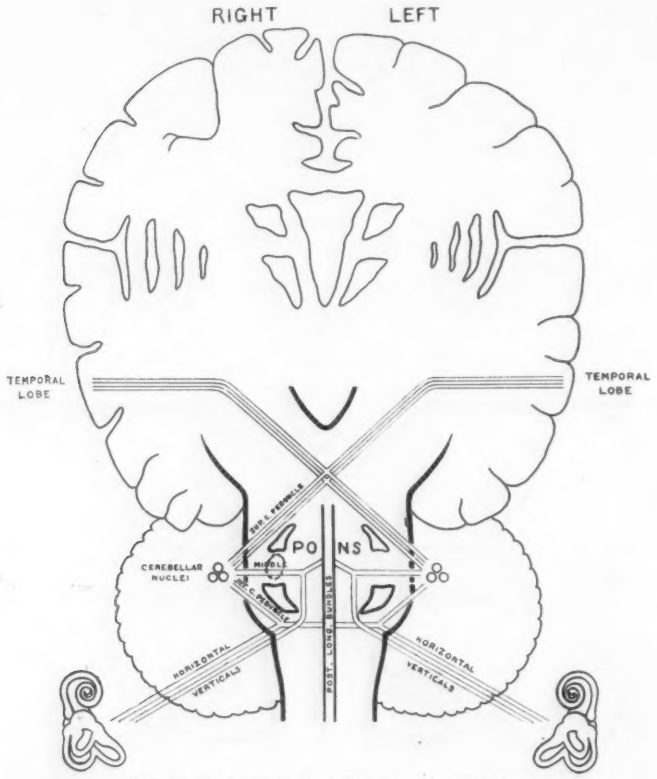

Fig. 7. Dotted circle indicates site of lesion.

none; vertigo, none; past-pointing, none; falling, none; there is obviously a destruction of the labyrinth or VIII nerve. (Fig. 3.) We would of course have the corroborative evidence of complete deafness of this ear. This picture of a dead auditory apparatus and a failure of any of the semi-circular canals to produce responses, shows beyond all doubt that the labyrinth or VIII nerve is destroyed.

2. When stimulation of the right horizontal canal produces: nystagmus, none; vertigo, normal; past-pointing, normal; falling, normal, it suggests a lesion in the medulla oblongata between Deiters' nucleus and the posterior longitudinal bundle on the right side. (Fig. 4.)

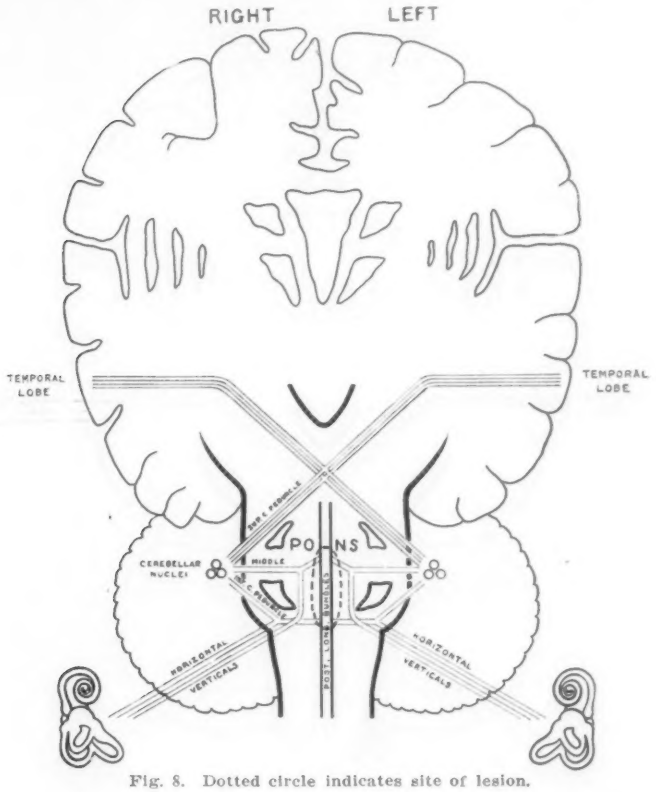

Fig. 8. Dotted circle indicates site of lesion.

3. When stimulation of the right horizontal canal produces: nystagmus, normal; vertigo, none; past-pointing, none; falling, none, it suggests a lesion of the right inferior cerebellar peduncle. (Fig. 5.)

4. When stimulation of the right vertical canals produces: nystagmus, none; vertigo, normal; past-pointing, normal; falling, nor-

mal, it suggests a lesion in the posterior portion of the pons near the posterior longitudinal bundle on the right side. (Fig. 6.)

5. When stimulation of the right vertical canals produces: nystagmus, normal; vertigo, none; past-pointing, none; falling, none, it suggests a lesion of the right cerebellar peduncle. (Fig. 7.)

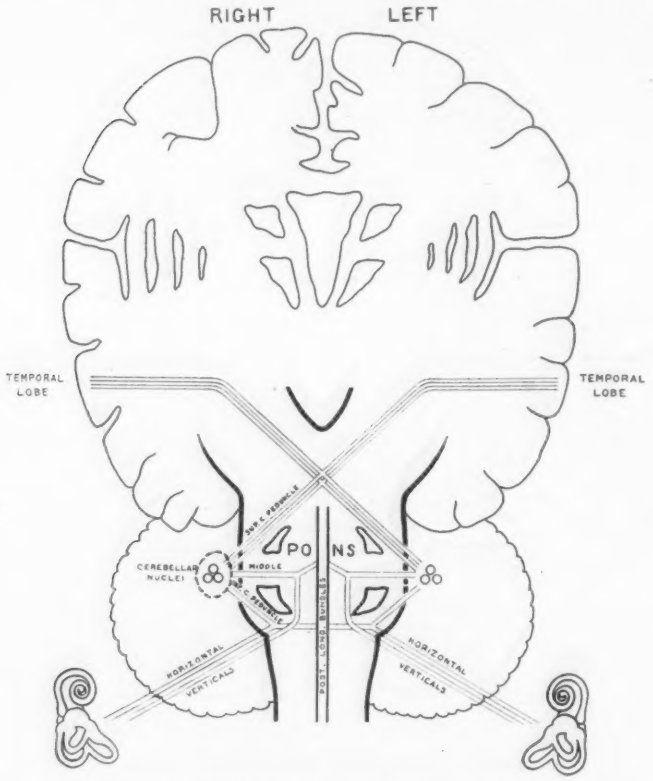

Fig. 9. Dotted circle indicates site of lesion.

6. When stimulation of *all* canals of *both* ears produces: nystagmus, none; vertigo, normal; past-pointing, normal; falling, normal, it suggests a lesion of the posterior longitudinal bundles themselves. (Fig. 8.)

7. When stimulation of *all* canals on the right side produces:

nystagmus, normal; vertigo, none; past-pointing, none; falling, none, it suggests a lesion of the cerebellar vestibular nuclei of the right side. (Fig. 9.)

8. When stimulation of *all* the semi-circular canals of *both* ears produces: nystagmus, normal; vertigo, none; past-pointing, none;

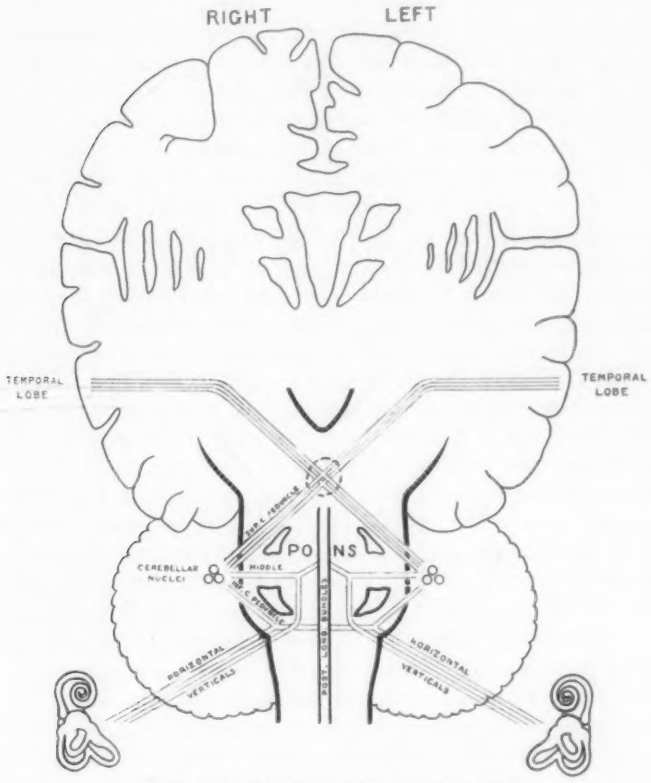

Fig. 10. Dotted circle indicates site of lesion.

falling, none, it suggests a lesion at the base of the cerebral crura at the point of decussation of the two superior cerebellar peduncles. (Fig. 10.)

9. When right ear is totally deaf and stimulation of its semi-circular canals produces: nystagmus, none; vertigo, none; past-

pointing, none; falling, none, and stimulation of the left horizontal semi-circular canal produces the only normal reactions on that side, the lesion is located in the right cerebello-pontile angle. (Fig. 11.)

Of course, when confronted with actual pathologic cases of intracranial involvement the findings may be obscured by pressure phe-

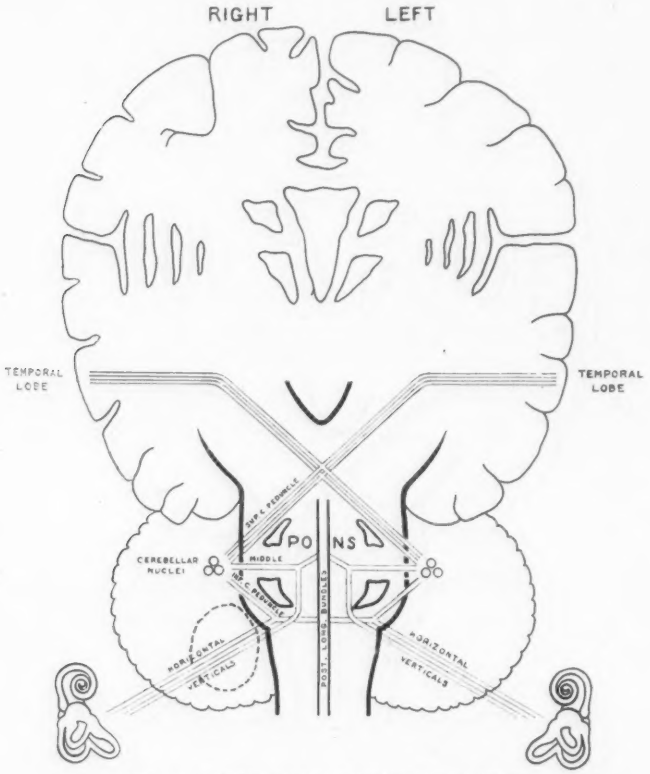

Fig. 11. Dotted circle indicates site of lesion.

nomena, and it is not the purpose of this paper to indicate that a diagnosis of the exact location of the lesion may be made in such a simple manner as indicated in the "phenomenon-complexes" presented. This method of analysis, however, constitutes a means of approach in explaining the significance of the impaired or absent responses to stimulation of the vestibular portion of the internal ear.

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PHONETICS IN RELATION TO SPEECH DEFECTS.

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Phonetics in its broadest sense means a study of the whole range of sounds, articulate, musical and otherwise. As usually understood, however, it may be defined as the science of speech air waves. It investigates the nature and causes of the changes that the articulate sounds of a language may undergo and studies the normal action of the speech mechanism in producing the varied body of sounds which go to make up articulate speech.

At first glance it might appear that we are merely stating a truism when we say that any teacher, whether engaged in teaching speech to children who have no pronounced defects, or engaged in correcting actual defects, such as have already been described, should have thorough knowledge of the science of phonetics. Yet we can state without fear of contradiction that the majority of teachers in our schools are woefully ignorant of even the simplest facts of phonetics. They are well grounded in the five formal steps of Herbart, at least just after leaving their training schools. They know Rousseau's Emile and all about the education of the Spartan youth, but the difference between voiced and voiceless sounds, the exact relation between *n*, *g* and *ng*, the positions of the organs of speech in the formation of the fundamental sounds of English are Eleusian mysteries to them. They know little or nothing about the anatomy or hygiene of the organs of speech.

Very little attention was paid to the science of phonetics before 1867 when Alexander Melville Bell with the publication of his "Visible Speech" started the movement by which Henry Sweet and other patient observers further developed and scattered abroad terminology and tenets which spread to Scandinavia, the United States and France, then to Germany, Italy and Spain.

The experimental study of the phenomena of speech was first started in 1874 by a French society for which Marey, Dr. Rosapelly, and Charles Verdin invented instruments and did much investigating. In time the Abbe Rousselot heard of the experiments and his laboratory at the College de France has been the best and the most famous in the world for the study of experimental pho-

netics ever since. Dr. Scripture's Experimental Phonetics in 1912 is the latest contribution to the science. At present, instruments exist for recording, among other things, the vibrations of the larynx, the movement of the soft palate, that of the lips, that of the lower jaw, the points of contact of the tongue against the palate, and the air pressure measured from within the mouth or from the lips.

Hundreds of phonetic alphabets have been proposed but the one that has made most progress and bids fair to become somewhat general is that of the *"Association International Phonetique"* under the direction of Paul Passy of Paris, who between 1885 and 1889 adopted some letters from A. J. Ellis, the author of "Early English Pronunciation," and some notations from Bell and Sweet.

We shall now discuss what these fundamental sounds are and then their importance in relation to the correction of specific speech defects. We cannot disassociate the tones of a piano from the instrument which produces the sounds, nor can we disassociate the sounds of articulate speech from the mechanism which produces them. Just as a defect in the piano, such as broken strings, or a cracked resonance chamber, will affect the tones which the instrument produces, so any defect in the mechanism of speech will manifest itself in speech. It would be about as reasonable to attempt to restore proper tones to the defective piano, by placing it where it could hear the tones of a perfect instrument, as to attempt to correct a speech disorder due to an anatomical defect in the speech mechanism, by letting the patient hear and try to imitate the correct sound. The anatomical defect itself must be discovered and if possible repaired by surgery.

The first fundamental of phonetics is therefore a knowledge of the speech mechanism. This need not frighten anyone. It is not expected that the teacher be a laryngologist, or an ear specialist, or an orthodontist, but he ought to know at least as much about the speech organs as will enable him to decide what is wrong with the tongue or lips or palate or teeth and where to send the patient for treatment.

Having attained at least an elementary knowledge of the anatomy of the speech organs the teacher should master the formation of the sounds of the mother tongue. The main thing in the study of phonetics for the correction of speech defects is not the systematizing and naming of the sounds, but it is the ability to produce them accurately and *correctly*, and the ability to feel and describe

just how they are made so that others may be taught how to pronounce them.

It is not sufficient to pronounce a sound upon which a child lisps and ask him to imitate it. The child does not hear that sound correctly, no matter how accurate his hearing or how carefully it is pronounced, for every sound has its kinaesthetic as well as its auditory side and the two cannot be disassociated. Unless a child pronounces correctly he is incapable of hearing correctly for he lacks the proper kinaesthetic or movement images which are inseparably connected with the auditory images. The mind, then, and not the ear is the hearer of correct sound and as soon as the speech defective develops a critical faculty regarding the pronunciation, intonation and inflection, by proper training of the organs of speech he is well on his way toward correction.

Exercises for articulation must be based upon the action of the tongue, lips, teeth, etc., and these exercises must be patiently pursued. Careful attention of this kind, given in time, to the mechanism of the speech of children who exhibit a tendency to lisp, stutter, etc., is sufficient to prevent the development of such defects. The chief aim in teaching articulation and enunciation should be to train the organs of speech to accuracy and the organs of hearing to acuteness.

Phonetics includes not only the correct formation of single letters and sounds; but proper phrasing, inflection or modulation and emphasis. As already stated the kinaesthetic impression must be associated with the auditory impression. A printed word should suggest a definite series of motor reactions (speech) as well as a series of sounds, with associated meanings. Teachers must be able to detect wrong positions of the tongue, lips, etc., by the sound and to give the exact directions for correction. The value of the practice lies not in the ground covered but in its accuracy, range of application and self activity of the pupil. Incorrect phonetics are worse than none.

The science of phonetics can be found in the works of Bell, Sweet, Rippmann, Vietor, and others whose names and works are contained in the appended bibliography. We shall, however, attempt to treat the subject very briefly here, with the idea not only of imparting knowledge, which is indispensible to every teacher interested in correct speech, but also to arouse an interest in the subject which will lead to further and more minute study on the part of the reader.

The first thing is to master certain general distinctions. The most important of these is breath and voice. In ordinary breathing or sighing the glottis or space between the vocal cords in the larynx is wide open, so that the air from the lungs passes through without any sound except that caused by its friction against the sides of the mouth and throat passages. The simplest breath sound is the aspirate *h*. If, on the other hand, the edges of the glottis are brought together so that the passage of air between them makes them vibrate, we have voice. If the passage at the back of the mouth into the nose is left open by lowering the soft palate, we get a nasal sound such as *m*, which by closing the nasal passage becomes *b* as in amber.

If the glottis is closed entirely, thus obstructing the outward passage of the air, and the air current suddenly breaks this closure we get what is known as the glottal stop. When we cough, as in clearing the throat, we produce a vigorous glottal stop. This is really a consonant formed in the glottis. This sound is unknown in normal English speech but is very common among stutterers especially so-called vowel stutterers. Before initial vowels the stutterer involuntarily shuts up the glottis in a spastic manner and has great difficulty in getting it open for the vowel. There is therefore really no such thing as vowel stuttering, inasmuch as the glottal stop, a consonant, is the basis of the difficulty. There are three ways of attacking an initial vowel: (1) Beginning with the glottal stop; (2) beginning with the audible *h*; (3) beginning with a soft breath or inaudible *h*. The first is the method used in German, the last is the English way.

The Vowel. This vibrant, changeful soul of our language can hardly be defined. A good definition is contained in "The Technique of Speech" by Dora Duty Jones: "Every correctly spoken vowel is a complete harmony in itself, consisting of a fundamental tone made by the vocal cords, resonant tones produced in the vowel chamber, and tones made by the resonators of the head and face." When the voiced sound proceeding from the larynx is modified in various ways by the shape of the mouth cavity which produces certain resonances, vowels result. Each vowel has a pitch of its own, aside from the pitch of the laryngeal tone. Differences in pitch may be easily noticed by whispering the vowels. The pitch of vowels varies with the size, as its character varies with the shape of its resonator and the importance of the tongue in regulating its shape. Pitch is demonstrated in whistling, for in whistling the tongue is brought forward for high notes, thus mak-

ing a smaller vowel chamber, and backward for low notes, thus increasing the size of the chamber.

Dr. W. A. Aiken in "The Voice" says: "indeed, since both the character and the pitch depend upon the shape and size of the vowel chamber which is chiefly regulated by the position of the tongue, it follows that if the tongue is properly controlled both the character and the pitch of the resonance will take care of themselves."

Any tenseness—straining the vocal cords too tightly by raising the chin, compressing the larynx by dropping the position of the head, or frowning—will detract from the purity of the vowel sounds. The upper jaw should remain at right angles to the properly erect spine, and the lower jaw only allowed to move. The tongue should be trained to enlarge the oral cavity within the mouth, leaving the lips free as possible for the expression of feeling. The corners of the lips must be well separated without grimacing.

Vowel quality is also largely dependent on the lips. The lips may be held in a natural, or neutral position; they may be spread out so as to leave a long narrow opening between them, or they may be drawn together so that the opening between them is more or less round. Vowels produced with the lips in the latter position are called rounded vowels. Others are called unrounded. If the spreading of the lips is very marked the vowels may be termed spread. Such spreading of the lips is, however, not usual in English and it is sufficient to distinguish the English vowels simply as rounded or unrounded. An example of a rounded vowel is *oo* as in boot; examples of unrounded vowels are *ee* as in feet and *i* as in pit. Another element which is of great importance in determining the vowel quality is the state of the tongue as regard muscular tension. Vowels produced while the tongue is in a state of considerable muscular tension are called tense vowels: example, *ee* as in beet and *a* as in day. Those produced while the tongue is not in a state of muscular tension are called lax vowels: example, *i* in lip. The soft palate may affect the vowel quality. In the articulation of normal vowels the soft palate is raised so that it touches the back wall of the pharynx. The result is that no air can pass through the nose. It is, however, possible to lower the soft palate so that the air can pass out through the nose as well as through the mouth. When the vowels are produced in this way they are said to be nasalized.

As we have just said vowels are the result of different shapes of the voice passage, each of which molds the laryngeal tone into a different vowel, mainly by different positions of the tongue and lips, but without narrowing the passage enough to cause friction of any kind which would produce a consonant. The number of possible vowels is as unlimited as the number of organic positions which produce them. But if we select certain definite positions as fixed points, it is possible to determine intermediate points and thus classify the vowels according to positions.

For the sound *oo* (boot) the back of the tongue is raised almost to the soft palate. At the same time the lips are rounded. For *ee* (feet) the middle of the tongue is raised close to the middle of the hard palate. The lips may or may not be drawn back, and the teeth are close together. For *ah* (father) the mouth is wider open than for any of the other vowels and the middle of the tongue is slightly raised; *oo* is farthest back of all vowels, *ee* is farthest front and *ah* occupies an intermediate position between the two.

The Consonant. As the etymology of the word indicates a consonant sound is a sound made with and by the help of another sound, the other sound being a vowel. Consonants are formed by obstructing or stopping vowels by the correct use of some of the speech organs. If, instead of letting a vowel out naturally through the mouth, the lips are closed and the sound is turned up through the nose, the nasal consonant *m* is formed. If the tongue and palate are used to turn the sound into the nose the sound *n* or *ng* is formed and so on with the stops employed in producing *g*, *k*, *y*, *q*, etc. Bell says that the consonants are the articulations or joints upon which vowels and syllables turn. A syllable is a group of sounds containing a vowel, or vowel-like consonant, uttered with one impulse of stress. A syllable may consist of one or more vowels, or of vowels and consonants combined, but each group must be enunciated on a single voice impulse.

The consonants have more easily defined distinctions than the vowels, and distinctions that can be more readily observed by the eye. The visual images, then, observed by the constant use of a mirror aid greatly in the formation of correct habits for the speech defective.

Each aspirate or voiceless consonant has a corresponding vocal or voiced consonant and in the cases of *t*, *p*, *k*, two correspondences —a vocal and a nasal. The same muscular movement of the tongue is used for both the aspirate and its correspondences; but in the

case of the latter the breath is vocalized; these are termed sonants, sounding letters. These consonants in which the vocal cords do not vibrate are called surds (p, t, f, s, k, sh, th).

In the case of *t, d,* and *n,* we have a marked instance of the beautiful economy of nature, whereby the same muscular movement accompanied by modified conditions of breath, produces three distinct consonant sounds. The same relation holds good in the case of *p, b, m* and *k, g, ng.** Special attention must be directed by the teacher to the essential differences between *b* and *m, d,* and *n,* and the movements of the soft palate in each case. The trying and unusually prevalent fault of nasality, which renders English speech piercing and harsh to the musical ear, is due in the majority of cases to a dropping of the soft palate. One of the fallacies of speech due to the constant confusion of the written symbol with the spoken sound is the so-called "dropping of the g"; e. g.—in the substitution of "sinin" for "singing," of "dancin" for "dancing." The error arises from the assumption that the sound *ng* equals the sound of *n* and the sound of *g,* instead of recognizing that *ng* is an arbitrary symbol to represent one single, indivisible sound. A perfact *r* is produced by a vibration of the tip of the tongue against the front palate just above the roots of the upper teeth. In the case of the final *r,* so purely vocal that it almost belongs to the vowel group, the tongue is raised enough to meet gently the hard palate. The movement must be smooth and without the slightest vibration or "burring." If this soft *r* is used in positions other than final, e. g. in heart, horse, art, curse, etc., it must be sounded very delicately. *Ch* is a simple occlusion with an explosion following it, but the explosion is more gradual than the explosion for *t* and *d,* and the explosion is of quite a different character from the rush of air for *sh.* The region of the contact of the tongue for *ch* and *j* is larger than for *t* and *d.*† *Zh* results when vocalized breath is substituted for mere aspiration.

Projection of the tongue. In the formation of *th* and *dh* the tongue should not be placed between nor projected beyond the teeth. The sounds can be formed between the teeth, but the appearance of the mouth is greatly improved when the tongue is not constantly obtruding itself. In the production of the sound *w* the lips from the vowel *oo* with a slightly more contracted opening and are then forcibly jerked apart. In the voiceless formation of *hw,*

*"Graduated Exercises in Articulation," Samuel Arthur King. Small, Maynard & Co., Boston.

†"The Sounds of Ch and J," Winifred Scripture.

the same movements are made with a strong initial aspiration. In *hy* and *y*—the sound of *y* is formed on the basis of the vowel *ee*, and the jaw is then dropped. The aspirate form *hy* heard in Hugo (hyoogo) and human (hyooman), etc., is very similar in sound to the Scotch *ch*. As *h* in the articulations is a mere forcible expulsion of breath, it does not represent any fixed formation. The *h* before *w* and *y* produces respectively a whispered *w* and a whispered *y*.

King says that "for purposes of effective and musical speech the differences between the three classes of consonant sounds can be emphasized by showing that the vocals and nasals are capable of receiving musical expression. They can be (a) prolonged on a note, (b) varied in pitch, either by (1) a musical slide or by (2) going up and down the scale on single notes. Instead of being, therefore, mere whisperings incapable of being dwelt upon, these vocal and nasal consonants are of equal importance with the vowels in the equipment of a good speaker. Here we have one of the great secrets of beautiful and effective speech. The power of dwelling on the vocal consonants is, in the majority of cases, the result of deliberate practice alone. The uncultured speaker is immediately betrayed by his curtailment of the vocal consonants. His attention never having been directed to their power in speech, they are in his mouth deprived of their due share of voice, and differ only slightly from their corresponding aspirates; e. g., supstance for substance, secont for second, recoknize for recognize, etc. The cultivated speaker on the contrary dwells upon these vocals, throws into them all the voice they are capable of receiving, and thereby mellows his whole enunciation.

If this matter were uniformally attended to, there would be an end to the reproaches heaped upon the head of the poor neglected English by the foreigners upon the ground of the lack of musical qualities in the language. We have not, it is true, a great preponderance of the more open vowel sounds, so suited to the notes of song; but our clusters of consonants, when not neglected and deprived of their due vocality, give a strength and dignity that well compensate for the lack of open vowel sounds in the language."

Consonants admit of twofold division by form and by place. By *form* we distinguish first continuants or fricative sounds (such as *f, v*, labial fricatives; *s, z, sh, zh, th, dh*, front ligual fricatives) sounds in which a channel permits a current of air to issue with a rushing sound; second, stopped or occluded or plosive sounds

(such as *b, t, k*); third, nasal sounds (such as *m, n,* and *ng*); fourth, lateral or divided consonants (such as *l,* formed by stopping the middle of the passage and leaving it open at the sides); and fifth, rolled or trilled consonants, which are the result of vibrations of flexible parts of the tongue, thus in the trilled Scotch r the point of the tongue vibrates against the gums, the English *r* in "red" being the corresponding open consonant without any trill.

By *place* we distinguish first velar consonants, formed by the contact of the root of the tongue and the soft palate (such as *k, g*); second, palatal (such as *y* in you); third, dental (such as *t, d, n, s, z*), formed by the point of the tongue touching back of the upper teeth, from which the blade point (sh) in she and (zh) in rouge are formed by raising the point of the tongue toward the *r* position; fourth, bi-labial (such as *p, b, m*); fifth, labio-dental (such as *f, v*); sixth, velar (such as *wh, w*), formed by narrowing the lip opening and raising the back of the tongue at the same time.

Beside the main positions, front, back, etc., there are an infinite number of immediate positions, which we distinguish roughly as inner or nearer the throat, and outer or nearer the lips. Thus *r* is inner point; *th,* as in thin, and *th* as in then, are outer point or teeth point; the ordinary English *t, d, n, l,* being formed in an intermediate position.

Syphilis as a Factor in Diseases of the Thyroid Gland. T. G. SIMONTON, *Pennsylvania Med. Jour.,* Feb., 1918.

The author reports five cases of exophthalmic goiter all of which were of syphilitic origin. All the patients were women, none of them gave a history of syphilis but in all of them the blood Wassermann reaction was positive (in three of the patients 4 plus, in two of them 2 plus) and all of them showed (except in one patient, a girl of 19, who disappeared before treatment was instituted) marked improvement under specific treatment. The author accordingly makes the following recommendations: 1. In all cases of tumor or disturbances of function of the thyroid a Wassermann test should be made. 2. Before operative measures are considered in any given case the specific or non-specific nature of the tumor should be determined. 3. The iodides should be withheld as a routine measure until a Wassermann has been taken. ED.

SUSPENSION LARYNGOSCOPY—AN AID IN REMOVING FOREIGN BODIES FROM THE LARYNX AND ESOPHAGUS—REPORT OF CASES.*

DR. WM. B. CHAMBERLIN, Cleveland, Ohio.

The history of laryngology has been punctuated by certain outstanding events which have ushered in epochs of great advancement. The first of these was the invention of the laryngoscope by Garcia in 1855. From this humble discovery, simple in the eyes of the practitioner, and even of the medical student of today, laryngology had its origin. The beginning of the next great epoch of advancement may be said to date from the introduction of cocaine in 1884. Subsequent to this, although progress was steady and continuous, no really great event in its development occurred until the introduction of the bronchoscope by Kirstein in 1895 and its subsequent perfection by Killian, Jackson and others.

But whereas the invention of the bronchoscope may be looked upon as epoch making, in the ultimate possibilities which it has brought within its field, no such position can be accorded to suspension laryngoscopy; however enthusiastic we may be in regard to its use. Granted that, with suspension, we can view a field *in toto*, of which we can only gain a composite picture with the bronchoscope, still the possibility of the same view with the bronschoscope nevertheless exists, while the ultimate extent of the field opened to us by means of bronchoscopy or esophagoscopy is immeasurably greater than anything which suspension may afford. So we may say that suspension is in reality a refinement of bronchoscopy, giving us an immediate and more comprehensive view of a much more limited field, making possible certain manipulations within that field hardly possible by means of the tube, and rendering certain other manipulations vastly more easy. It is to the latter of these advantages that I wish to call your attention—namely, the removal of foreign bodies from the upper respiratory and alimentary tracts.

One equally familiar with tube and suspension work can scarcely fail to have noted certain advantages possessed by suspension in the rather limited field to which it can be applied. First of all may

be mentioned the extent of the field immediately before our eyes, an extent in breadth and thickness, even though the length may be limited. Certainly the tube can give us nothing similar. In addition we are not only able to examine every portion of this field most readily ourselves, but we can also demonstrate it almost equally well to others. And last of all must be mentioned the advantage which comes from the free and untrammeled use of both our hands. Whereas in tube work the left hand is continuously employed in holding and directing the tube, in suspension both hands are equally free and available for use. This has rendered possible certain operations *per vias naturales*, hitherto only possible by the external route. I have only to call to your attention the very wonderful technique developed by Lynch, a member of this society, as an illustration.

In foreign body work the advantage of this ability to use both hands is frequently most apparent. I refer especially to the difficulties in disengaging pointed objects partially imbedded in the walls of the surrounding tissues—notably open safety pins. A foreign body lying in the larynx or upper part of the esophagus, especially if it be pointed and partially imbedded, often presents peculiar and unusual difficulties. In such cases, if the tube be employed, only the point of the tube is engaged and its position is maintained and controlled often with much greater difficulty than when the foreign body lies deeper within the trachea or esophagus. The strain placed upon the left hand is considerable. With suspension the spatula, after once adjusted, remains firmly fixed in position. This position may be altered at will byy means of the screw adjustments, while both hands are left equally free for the performance of the operation in question.

My first two cases were in infants nine (9) months and two (2) weeks old, respectively. In each the size, shape and position of the pin had been carefully determined by previous X-rays and in each the technique used was the same. On bringing the head of the pin into view under suspension, this was grasped by one forcep and moved laterally, with slight traction, in a direction toward the point. This manipulation tended to disengage the point from the position where it was imbedded to bring the shaft into view. Now with the head of the pin held firmly by one forcep in its new position, the shaft was grasped by a second forcep in the free hand and traction made in the direction of the mouth, thus further disengaging the point and bringing the eye, or curled portion of the

pin, into view. In other words, a complete version was performed, as of the *foetus in utero*. The complete removal was then the work of but a few seconds—the whole operation, after the suspension apparatus had been placed in position, requiring almost less time than its description.

The last of my three (3) cases was in an infant eleven (11) months old and was for some unknown reason more difficult, probably the deeper position of the point in the tissue, and required a much longer time. In the latter case version was repeatedly tried,

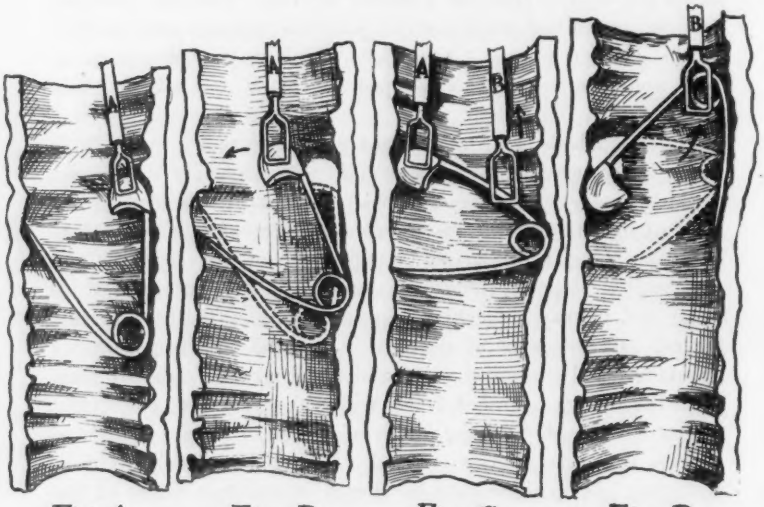

Fig. A *Fig. B* *Fig. C* *Fig. D*

as in the two previous cases, but was unsuccessful; a considerable amount of time thus being lost. A short tube was then inserted through the opening afforded by the suspension, the point of the pin disengaged from the tissue by means of forceps and the point drawn well within the tube. Tube and forceps, including the pin firmly in its grasp, were then easily withdrawn.

Suspension is not only especially applicable to the removal of foreign bodies from the upper esophagus, but from the larynx as well. Sylvia P., aged 4 years, had exhibited stertorous breathing, slight dyspnoea and some cough for two weeks. The usual methods of examination, as well as X-ray, gave no results. Examination under suspension showed a thin foreign body, lying antero-

posteriorly, parallel to the cords and firmly imbedded in the interior commissure, as well as in the inter-arytenoid space. This was grasped by forceps and removed with considerable difficulty. There

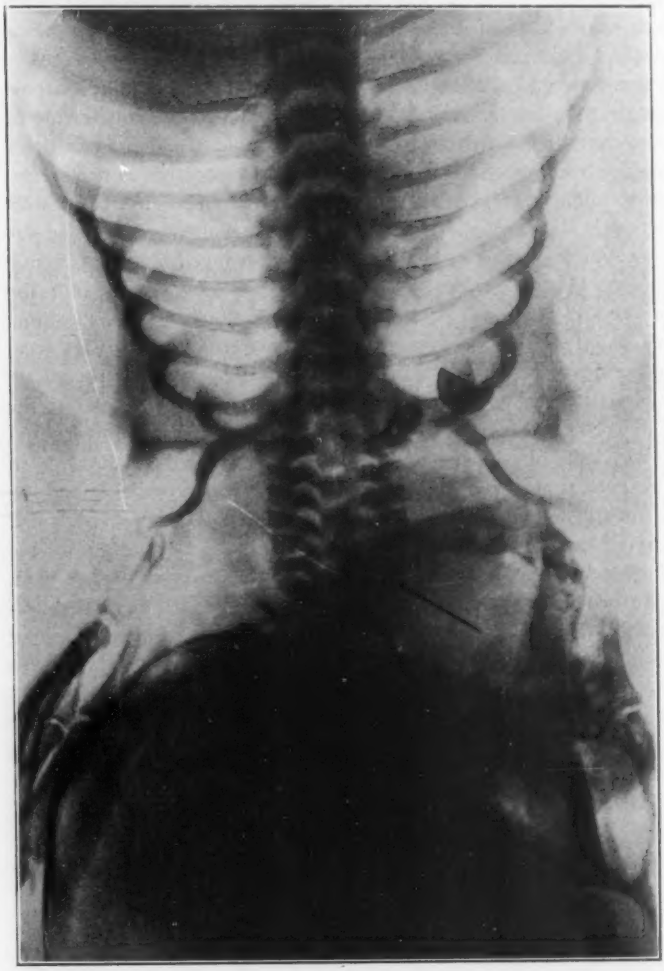

Fig. E.

was slight bleeding and some laceration of the tissues. The child made a rapid and uneventful recovery, leaving the hospital on the following day. The object, probably a thin piece of bone, was

roughly triangular in form and about 2 m.m. thick. It measured 8x15 m.m.

The last case I have to report is that of a workman, who, while eating a piece of bread and butter with jelly, felt a sharp foreign body on the base of his tongue and later in his throat in the region of the larynx, after the bolus of food had been swallowed. The §-ray showed a slight shadow in the region of the upper part of the larynx. Examination with the mirror showed a thin spicule of glass extending transversely across the middle of the right cord, its opposite end evidently imbedded in the false cord or ventricle. Removal might have been attempted and accomplished by the indirect method. But with the indirect method the patient must be in the erect posture, where the spicule, if disengaged and not firmly grasped by the forceps, might easily drop downwards into the larynx and trachea. With the patient in the horizontal position, this danger would be avoided. With suspension and under local anaesethesia the spicule was easily grasped by the forceps but, in my anxiety lest a too firm bite would crush it or break off the point in the tissues, the disengagement tore it from the forceps and it was lost. Prolonged and careful search failed to discover it. The patient was returned to the ward in good condition and, as he manifested no untoward symptoms, was discharged from the hospital two (2) days later. On the third day following the spicule of glass was recovered from the stool and measured 17x3x2 m.m.

Suspension may be performed either under general or local anaesthesia. In the last case reported there was little accompanying or subsquent discomfort, though the operation lasted something over an hour. Manifestly an examination under local anaesthesia could hardly be made in a highly nervous or hysterical patient. Neither could it be made in infants or children. With the latter a general anaesthesia is required. To many this would constitute a very decided disadvantage. Jackson insists that in tube work with children no anaesthetic whatsoever be employed. With this dictum I cannot agree, though I am perfectly willing to admit the success of the method in Jackson's hands. The only fatalities I have had in foreign body work were in my earlier cases in children where no anaesthetic was used. I firmly believe that in the hands of nine-tenths of the men attempting, or pretending, to do foreign body work, the attending risk to the child *with* an anaesthetic is very much less than *without*, Jackson's results notwithstanding. The latter has developed a technique, to my mind, possessed by few or

possibly no other man, so that without anaesthesia and working through an extremely long and narrow tube, the vast majority of his operations require but a minimum of time. With others the time consumed is much greater, while accompanying this are increased shock and danger of lacerating surrounding tissues and structures. After the child is first anaesthetized and the suspension or tube, placed in position, one is struck with the slight amount of anaesthetic required. The condition is in reality one of analgesia, not anaesthesia. So I reaffirm that the question of anaesthesia is one which every operator must settle for himself and on the merits of the particular case in question.

From a rather limited experience my conclusions are as follows: First, that foreign bodies lying in the larynx, hypopharynx or extreme upper part of the oesophagus often present decided difficulties with the tube. Second, that this is in most cases due to the difficulty of maintaining the tube in position, only its tip in reality being engaged. Third, in such cases suspension may afford an ideal solution of the difficulty, since (a), the apparatus remains firmly in position after it has once been adjusted, and (b), the free use of both hands is made possible. Fourth, with either tube or suspension a general anaesthetic is indicated in children, though either may be used with local anaesthesia in adults.

Ossiculectomy in Chronic Adhesive Otitis. A. J. BRADY, *Jour. Laryngol., Rhinol. and Otol.*, Feb., 1918.

In three cases the author performed ossiculectomy, not with a view of improving the hearing, which was a secondary consideration, but in an attempt to relieve incessant and intolerable tinnitus. In each of the cases the appearance of the drum membrane and the position of the ossicles led one to suppose that the contraction of adhesive bands was drawing the ossicles inward and exercising pressure on the labyrinthine fluid. In two of the cases there was complete relief; in the third case no improvement. ED.

THE SUBMUCOUS RESECTION OF THE NASAL SEPTUM.

DR. FRANCIS M. SHOOK, Oakland, Cal.

The technique of this operative procedure, which is the basis of intranasal surgery, has been evolved from the author's last two hundred cases. The author's aim has been to perfect a method which would combine the maximum of simplicity and safety. The procedure is as follows:

1. *Anesthetization.* A cotton pledgelet, which has been thoroughly moistened in equal parts of ten per cent solution of cocaine and adrenalin 1-1000 solution, is placed lightly and gently in each nostril. After about five minutes the nasal mucosa will be sufficiently anesthetized so that these pledgelets may be forced up as high as possible between the middle turbinate and the septum on each side. The dull end of a Freer separator is used for this purpose. There is very little discomfort, provided the pledgelets have been thoroughly moistened in the cocaine-adrenalin solution. The septum is then covered on each side with a thin layer of cotton which has been moistened in the anesthetizing solution. The patient is directed to breathe through the mouth, and to expectorate any fluid or mucus which flows back into the naso-pharynx. The line of incision is then infiltrated with .5 of one per cent novocain solution to which one drop of adrenalin solution 1-1000 is added to each four cc. Several drops of the novocain solution are injected on each side of the nasal spine on the floor of the nose. The cotton pledglets are then removed. The anesthetization requires about twenty minutes. In some of the extreme deflections where there are contact and adhesions between the septum and the nasal lateral wall this technique must be modified. The author has found infiltration with the novocain solution very useful in these cases, using a long straight needle with the flat side of the sharp needle end carried against the septum, underneath the perichondrium. Elevation of the perichondrium and musoca as well as anesthetization may be effected.

2. *The incision.* A straight incision about two mm. anterior to the junction of the skin and mucosa is started as high up as mechanically possible and carried down to the floor. The inferior end of the incision is turned backward very slightly. (See Fig. 1.) Any small bladed sharp knife will answer the purpose. The in-

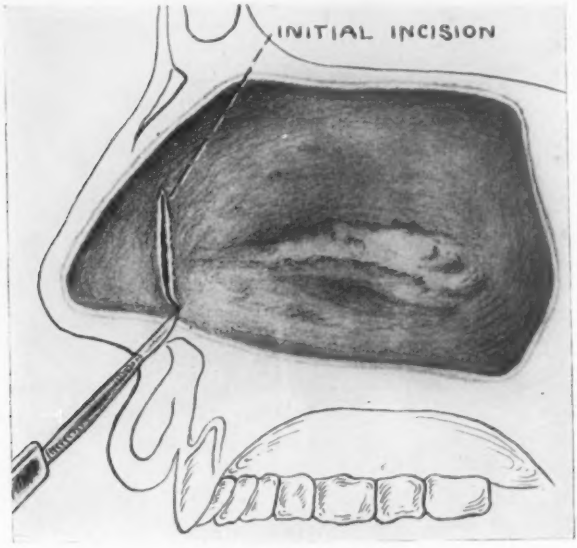

Fig. 1. Initial Incision.

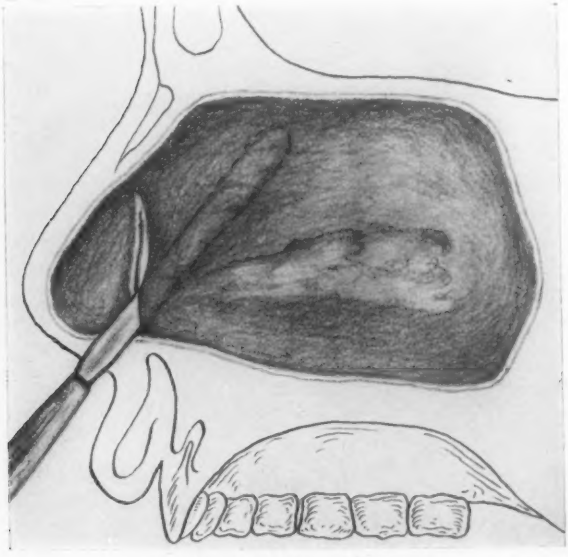

Fig. 2. Separation of Mucosa.

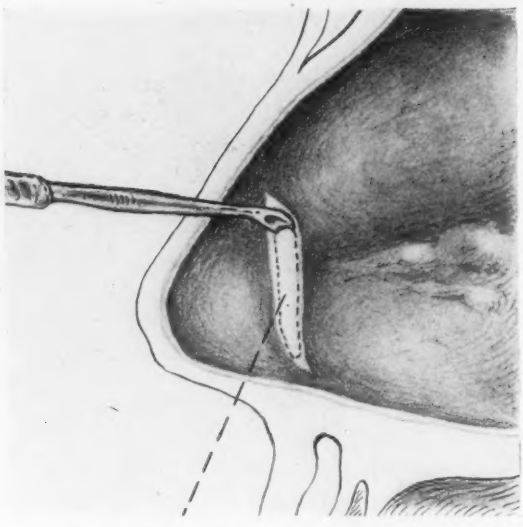

Fig. 3. Vertical Furrow Made With Curette.

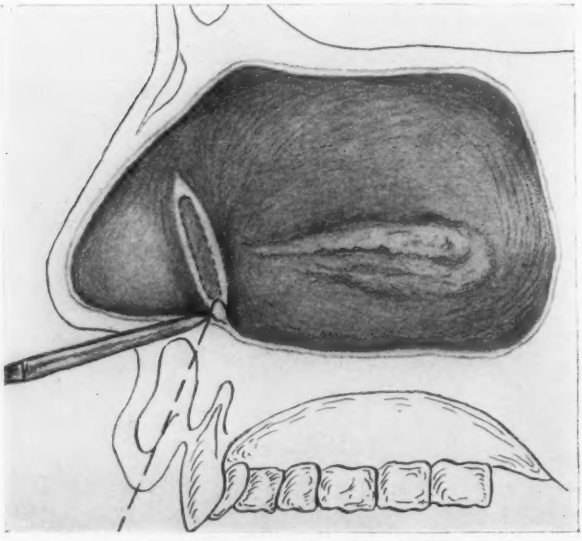

Fig. 4. Chiseling off Anterior Nasal Spine.

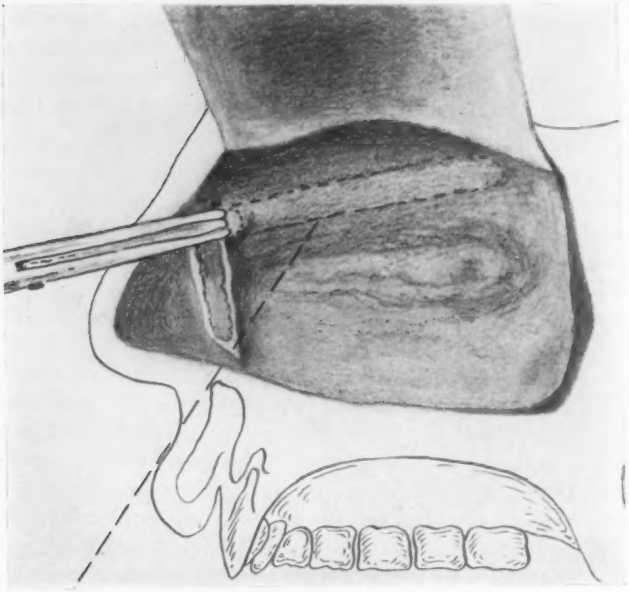

Fig. 5. Horizontal Furrow Through Septum Almost to Sphenoid.

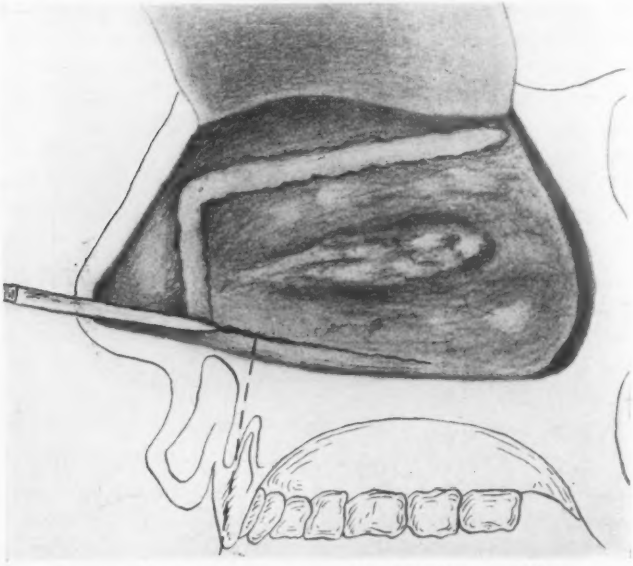

Fig. 6. Line of Cleavage of Septum Chiseling off Ridge.

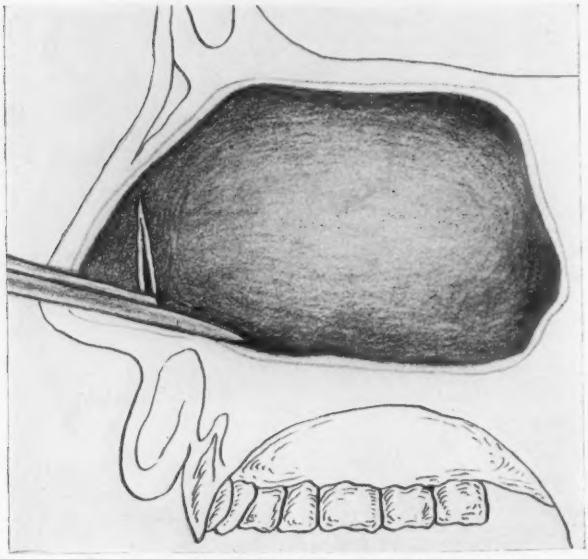

Fig. 7. Cutting Through Mucosa with Scissors.

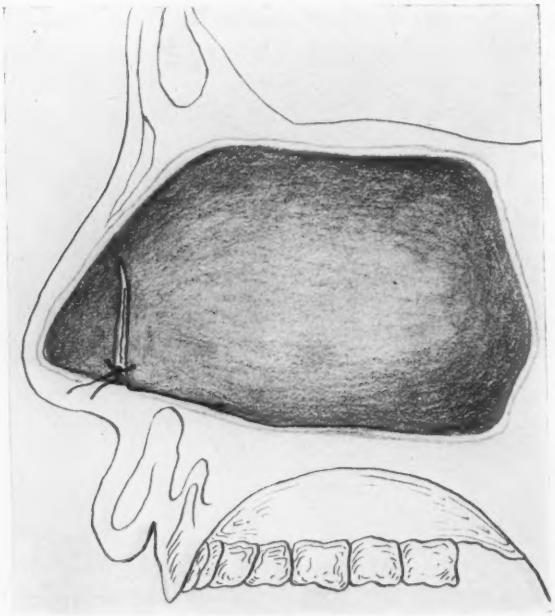

Fig. 8. Suture in Place.

cision is made through the skin because there is less liability of the skin becoming torn by the nasal speculum. Care is taken that the perichondrium is incised, so that the white cartilage appears at the bottom of the incision.

3. *The separation.* The perichondrium is picked up with a Carter curette at the junction of the upper and the middle third of the incision. In most cases separation at this point may be made very easily provided always that the operator is beneath the perichondrium. Below, a sharp knife is used to clear the mucosa down to the nasal floor. A Dunning separator is then carried from above downward and backward, as in Fig. 2. Separation is always made down to the floor of the nose. If the perichondrium is adherent, as is usually the case in the traumatic deviations, a sharp knife or sharp Freer elevator is used, with the cutting edge working toward the septum, and kept in view continually. In the types with extremely adherent musoca and perichondrium, separation is made for about three-fourths of an inch backwards, then discontinued until separation is completed for a similar distance on the other side, and the septum removed in this area. Sharp dissection is then continued until an area is reached, where separation takes place easily.

At this stage the separation is complete on the left or near side of the septum. The edge of a small curette is then placed against the cartilage above and slightly posterior to the upper line of the original incision, and a vertical furrow is cut through the cartilage as in Fig. 3. A finger is placed in the right nostril to act as counterpressure. The flap of mucosa and perichondrium is then separated on the right or far side of the septum, following the same principle as on the left side. The septal cartilage is then removed, usually with a biting forceps.

4. *Removal of nasal spine.* The nasal spine is dissected free with a sharp knife and broken off with one or two sharp blows with chisel and hammer. It is then grasped with a forceps held in the right hand and rotated while a knife held in the left hand cuts the fibrous tissue to which it is adherent. This procedure gives the maximum exposure to the ridge. See Fig. 4.

A horizontal furrow is then cut with a Jansen-Middleton forceps through the cartilage and bone of the septum, beginning above and extending back almost to the sphenoid. This isolates the septum from any connection with the cribriform plate and renders

safe the removal of the septum down to the ridge by means of a grasping forceps. See Fig. 5.

The ridge is attacked with a chisel. Several sharp blows causes the ridge to separate from its attachment to the floor along a definite line of cleavage. Any adhesions to the mucosa are cut with a knife and the fragment is removed very carefully. Rough manipulation in removing this fragment may cause a bad tear in one or both of the flaps. See Fig. 6.

The final steps of the operation are the cutting and suturing of the flap of mucosa. The flap is cut with scissors along the floor for about one inch. The posterior end of the incision is carried a trifle away from the median line in order to leave an opening for drainage. See Fig. 7. The anterior corner is made fast with a silk suture (Fig. 8). Oiled silk or rubber tissue is then laid over the mucosa and the nose packed with two gauze strips on each side. The first strip is a short one, which is placed between the middle turbinate and the septum; the second strip, a long one, fills the remaining interval. The packing is removed in six hours, and the stitch in two days. The after treatment consists of the use of liquid vaseline until the mucosa has become normal again.

Syphilis of the Inner Ear and Eighth Nerve. G. W. MACKENZIE, *American Jour. Syphilis, Feb.*, 1918.

According to the statistics from 30 to 60 per cent of congenitally syphilitic children are deaf. Syphilis is a far greater cause of deafness than is generally supposed, 52 per cent of cases showing lesions of the auditory nerve giving positive Wassermann reactions. The eighth nerve is the least resistant to syphilitic infection of all the cranial nerves. Usually the condition is bilateral, in congenital cases the deafness coming on more gradually. Either the nerve or labyrinth or both may be affected. Involvement of either structure has been recorded as early as the seventh day after the appearance of the initial lesion. In the very young the order of attack is first the meninges, then the nerve and finally the inner ear. ED.

ADENO-CARCINOMA OF THE NOSE; REPORT OF 4 CASES.

DR. LEE M. HURD, New York City.

Adeno-carcinoma of the nose is rare enough to warrant reporting each case.

From clinical or microscopical findings, it is hardly possible in the early stages, to determine whether the growth is of a benign or malignant character, and I should urge that all such growths be looked upon as of low grade malignancy.

Dr. Jonathan Wright, dean of rhinological and larynological pathology, has fully discussed this subject[1, 2, 3] and I have had the good fortune to have him examine all the specimens from these four cases.

From a feeling of triumph in surgery to one of humility, I report the subsequent history of Case 1, previously reported in the *Annals of Otology, Rhinology and Laryngology*, June, 1917.

Case 1: C. F., aged 59, U. S.; occupation, milkman; previous history, negative; first seen on December 6, 1905, when he gave the following history:

Twelve to fourteen months before, he began to notice swelling of the face and hard palate. For the past ten years, he says, he has had a small swelling on the alveolar process. The teeth on that side fell out about five years ago, also some on the opposite side. The subjective symptom which the growth gave was nasal obstruction. The growth, where it had broken through the bone, had a cystic feel. The swelling in the mouth has obliterated the usual landmarks, and was one smooth swelling from the gingivo-labial fold well beyond the median line, involving the alveolar-process as far as the left canine tooth. The anterior surface of the growth markedly bulged the cheek on that side, and overrode the intra-orbital ridge and the nasal bone. The naso-antral wall bulged into the nose, and pushed the septum over it until it touched the opposite side. The growth had caused absorption of the bone in several directions, namely, the anterior and inferior antral walls, and probably the nasal walls. His heart and lungs were normal, kidneys slightly congested. He had been a steady whiskey drinker for years, averaging about ten drinks daily.

The superior maxilla was excised in toto.

The gross section of the specimen showed a mass, creamy yellow in color, granular, not vascular, the consistency of the spleen.

The growth was submitted to Dr. Jonathan Wright for examination, who reported as follows:

"This growth is an adenoma. The interest, both clinically and histologically, is whether we are to consider it malignant or benign. In many places, the type is one of simple row formation, run wild, but not clustered into irregular clumps or cells, which in this kind of case, I have been accustomed to associate with malignancy. In several of the places, however, this massing of the cells in the stroma is evident. In these localities, and a few others, a little suggestion of structure is to be noted. In other places, the cells are arranged around a blood vessel for a center. In these sections, I do not make out any of the irregular karyokinesis, which is a striking intracellular feature in malignant growths. From my experience with such cases as this, I am inclined to think, in spite of several very dubious areas, that there is a good chance that this growth, even with repeated recurrences, may finally be entirely and permanently eradicated. If possible, the site of the growth should be promptly exposed, so that any recurrence may be observed and extirpated."

December 21, 1905, Dr. Wright sent me this supplementary report:

"On examination of other portions of this growth, I am inclined to think that we must give up any hope of its non-malignancy. There is too much atypical proliferation not to except prompt recurrence and metastases."

June, 1908, the growth recurred on the hard palate, and half of the left aveolar process and hard palate were removed.

Dr. Wright reported: "Sections of the growth removed on June 18, 1908, show the original adeno-carcinomatous growth."

January, 1910, removed right molar and surrounding tissue, except the skin.

March, 1910, removed eye and contents of orbit.

May, 1910, admitted to hospital with rapid extension into soft palate.

December, 1911, specimens of the growth showed the same histological characteristic.

July, 1914, much involvement in orbit and soft palate.

He has lost considerable weight, and looks badly, no metastases, does not complain of pain, no bleeding, no tendency to break down and ulcerate. Saw him again in 1914. This time in a City Hos-

pital, no longer able to work. Growth has grown very slowly since 1910. Passed from observation after nine years.

Case 2: A. C., age 65, married, retired Naval Officer, April, 1908.

Ten years ago, he had first operation for nasal polyps and has had a number of such operations since. Twenty months ago, in Italy, his polyps were removed, which was followed in three weeks by rapid enlargement of the cervical glands at angle of jaw on both sides with a gradual increase in size and number since. He has had several operations for the polyps in past years.

At present, he has severe headaches, extending from frontal to occiput, nearly complete nasal obstruction, mucoid nasal discharge, which is, at times, streaked with blood, with more blood the last three weeks.

Left eye shows paralysis of third and fourth nerves, fundus normal, cervical glands extensively involved, large and hard, probably some involvement of abdominal glands, cachectic.

Begs relief from pains and nasal obstruction.

Nasal examination reveals ethmoidal region blocked with what appears to be polypoid degeneration, which bleeds excessively on probing.

A gland was excised from the neck. Dr. Wright says:

"There is little or no lymphoid tissue left in this gland. Its frame work, for the most part, is a low grade connective tissue; this is infiltrated throughout with patches of cells, some of them arranged in the lymph spaces in such a manner, and are of such a morphological appearance as to suggest that they are metastasic deposits of an adeno-carcinoma."

Quite a hopeless condition, but the patient demands a consultation with the man who has been busy removing the polyps for the past eighteen months, and this doctor is quite incredulous as to its malignant nature, and as I refuse to operate, the patient returns to this doctor three weeks later, and dies on the table, of hemorrhage.

Case 3: C. C., Italian, age 42, male, married, March, 1911, robust health, for the four months previous, partial obstruction and increased mucoid discharge, frequent bleeding. Nasal examination reveals left ethmoidal region filled with a soft, purplish growth, which bleeds easily on probing.

March 4, 1911, specimen removed for examination.

Dr. Jonathan Wright reported: "Adenoma."

"This seems to be of the same nature of the former specimen from the case, that is, it is an adenoma of uncertain potentiality, better perhaps to call it a cyst-adenoma. Long, slender, non-ciliated epithelial cells are growing wild from a much altered stroma, which, however, they do not infiltrate, but from false acini and tubes, giving it the peculiar characteristics from which it takes its name."

"The stroma is made up largely of a hyperplasia of the smooth muscle fibres or of cells, resembling them both in cross section, and when viewed longitudinally through their terminal portions, perhaps, due to improper technique, are not shown satisfactorily.

"While it is possible that the course of this growth left to itself would rapidly present evidence clinically of malignancy, it is not impossible that thorough eradication, if that is possible, might lead to a favorable result."

Operation: Tied external carotid, and with a Ferguson incision, which was extended up to and through the eyebrow, with the soft tissues retracted, the bone of the anterior walls of the antrum, nasal cavity, and frontal were removed, and through this large aperture, the entire contents of antrum, frontal, ethmoids, sphenoid, and nose were removed, only leaving the mucosa of the vestibule.

There was no evidence of the growth except in the ethmoidal cells.

Microscopic diagnosis. "Very atypical looking adenomatous structure in the tissue from ethmoid, but very little of it. Gland is inflammed, but shows no evidence of metastases."

September, 1911, same condition was found in the right ethmoids.

The original incision was reopened, and the nasal septum entirely removed and all of the contents of the right naris and sinuses removed except the frontal sinus with no evidence of the growth except in the ethmoids as on the left side.

Microscopic diagnosis. September 6, 1911, by Dr. Jonathan Wright, "This still presents the characteristic histological features of a malignant adeno-carcinoma."

November, 1912, growth recurred in the scar tissue behind the root of the nose, with the same microscopical findings.

April, 1914, diathermy tried with some improvement.

May, 1914, growth appeared through cicatrix near inner canthus.

March, 1917, slowly extending, radium applied once a week. Left frontal sinus cavity filled with the growth, which was opened and

curetted, and radium applied direct by Dr. Bissell of the Radium Institute.

May, 1918, the mass inside at root of nose slowly increasing in area more involvement at inner canthus and a point presenting itself in eyebrow.

Now, he has some pain from pent up secretion in frontal, which disappears when the secretion evacuates itself. No metastases. He has lost some weight under observation to date, seven years.

Case 4: F. F., age 67, married, male, manufacturer, April, 1915. Robust health, seven years ago had polyps removed, again, three years ago, anosmia, neuralgic headaches, dating back for many years, not associated with nasal condition, no bleeding.

Examination: Mucosa much hypertrophied, septal deviation to left, left ethmoidal region filled with polyps. No metastases. Transillumination, clear.

April 21, 1915, removed polyps and ethmoidal labyrinth.

At about the middle of the ethmoids, I discovered tissue distinctly different from the polypoid degeneration, it being soft, yellow and practically bloodless, and of the same character as that of Case 1.

This growth was removed in small pieces with forceps, because of the septal deviation, the total amount filling a bottle.

The pathological reports are as follows:

Dr. F. E. Sondern's report.

"Histological examination. The specimen consists of a few flattened and irregular masses of greyish tissue with a moderately firm consistency and a finely papillomatous appearance.

Microscopical examination shows a papillomatous hyperplastic growth of the upper nasal mucosa diffusely infiltrated with inflammatory cells (polynuclears, eosinophiles and lymphocytes).

The growth exhibits a marked tendency to convoluted and plicated arrangement, preserving at the same time a papillary structure. The cells are of the ciliated columnar type and are proliferated to form several layers.

Vacuolation, due to edema, is of common occurrence in the cells. Goblet cells are plentiful. The basement membrane appears to be intact. There seems to be little evidence of anaplasia on the part of the hyperplastic epithelium. The supporting stroma is of loose connective tissue formation and markedly edematous, and contains many thin-walled blood vessels, which are for the most part empty. A few finely pigmented endothelial leucocytes are seen in the stroma.

Mitotic figures in the epithelial cells are rare, and in view of the hyperplastic nature of the growth, it would seem that this is an important point in considering the question of malignancy.

From a histological point of view, the tissue shows sufficient departure from the type to warrant regarding it with considerable suspicion as to its potential malignant capabilities, but at the present time, it does not possess the structure of a frank carcinoma.

Such hyperplastic growths in the nose, however, are prone to recur, and may take on malignant characters."

Pathological report of R. M. Taylor:

Gross: An irregular papillary mass, weighing about one gram.

Microscopic: The growth consists of heavy columns of epithelial cells, several layers in thickness, cuboidal to columinar in shape, and having cells on the surface. They are supported by a branched mesh-work of loose stroma, from which they are sharply demarkated. The cells are large, bladder-like and poorly stained. Proliferation is not very rapid, as only one dividing form was found. The specimen does not show whether the deeper structures are being invaded or not. Inflammatory cells of both the polynuclear and mononuclear type are scattered throughout. A tumor of similar nature and structure is figured in Wright and Smith's text book on page 244. We do not believe that it is likely to metastasize, but may recur, locally.

Diagnosis: Papillary adenoma.

The report of Dr. L. W. Strong:

"The tissue consists of a lexiform epithelium with a minimal amount of stroma between the epithelial cells. There is no cornification. The cells, in places, are highly cylindrical. There is no gland formation.

Diagnosis: Epithelioma cylindrocellular plexiform."

Report of Dr. Jonathan Wright:

"The examination of the specimen sent by you revealed an epithelial growth, probably malignant in nature, which should be classified, I should think, as far as I can judge from the small piece at my disposal, among the adeno-carcinomata.

The question of operation would depend entirely upon the clinical indications, that is, as to how far the thing had progressed, its situation, the general state of the patient, etc., but as you know, this form of growth is not so malignant as some others in the nasal cavity, and providing it was surgically possible to remove all the diseased tissue, it is an entirely justifiable procedure."

X-ray showed cloudiness in left region and antrum. Antrum was douched with a clear return flow.

May 24, 1915, when the ethmoidal region had healed, it showed a suspicious spot about ¼ in. in diameter on the anterior lateral ethmoid wall.

Radical operation urged, but was refused. Patient died, twenty months later in the South after some six months of a cerebral condition that was called meningitis.

Dr. Jonathan Wright has found that adeno-carcinoma is the most frequent malignancy of the nose.

Rosenheim[4] finds it the rarest.

Though it is the least malignant, two of my cases had recurrences after most extensive excision.

Case 1 in two years, and Case 3 in one year, and also in Case 4, after intranasal removal, but here I knew I had not gone beyond the infiltration.

The point of origin was clearly the ethmoids in Cases 3 and 4 and probably in Case 2.

In Case the growth was entirely within the antral cavity, but too extensive to be sure of point of origin, but probably antral.

Pain: Not until very late.

Hemorrhage early in Case 3, but not in the recurrences, late in Case 2.

Polyps were associated in Cases 2 and 4, while Case 3 gave clearly the appearance of a new growth in the ethmoids.

Dr. Jonathan Wright and Semon hold that a benign growth does not degenerate into malignancy.

The polyps were merely a coincident.

Thousands of polyps are removed repeatedly with malignancy only observed a few times.

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SIMPLIFICATION OF THE SURGICAL TREATMENT OF PERITONSILLAR ABSCESS.

DR. THOMAS H. CATES, Little Rock, Ark.

Though peritonsillar abscess is fraught with serious consequences in only exceptional instances, and we regard the real dangers of the affection as remaining for the most part within the realm of latent possibilities, there are, nevertheless, few maladies in which marked suffering is present to a more constant degree.

Should we not, in any event, give more than mere passing attention to those methods the application of which have proven to most quickly and thoroughly drain the abscess, and so to most materially shorten the period of the extremely annoying symptoms?

It is not the object of this article to present a technique that is new in principle, but rather to urge that greater deference be paid to the anatomic relation of the parts than is the usual custom in dealing with these cases.

By a proper conception of the anatomy with reference to the location of the abscess we not alone are in a position to proceed along better surgical lines, but likewise to simplify matters greatly by very promptly reaching the pocket of pus at the point of origin. On the other hand, a failure to fully comprehend the structure and relation of the tissues in this region, or to properly act upon this knowledge, often leads to disappointing results.

By proceeding in the usual and less rational way we frequently do not strike pus at all at the point first selected, and have to choose another site, or else considerably deepen the original incision, blindly groping, as it were, to reach a space containing pus. And, if successful in this respect, there is no assurance that sufficient drainage will be obtained to satisfy the demands of the case. Consequently, even further incisions are often necessary to gain this end and relieve the greatly distressing symptoms of the patient.

When called upon to treat one of these cases, we generally find the patient complaining of much pain—which may become almost unbearable—dysphagia, and withal of feeling quite ill. It is not unusual to find deglutition so greatly impaired that it is a practical impossibility for the patient to voluntarily take nourishment. And now and then we see a case in which respiration is interfered with to quite a critical extent.

Now, shall we follow the common procedure of sticking a knife in that part of the swelling which appears most prominent or softest, and immediately repeating this painful performance if no pus is discovered? Or, shall we make one incision in this way and then repeat it the following day, should the patient complain of being little or no better, and so on until relief is obtained? This may answer the purpose of effecting a cure by eventually securing adequate drainage; or, there is of course a possibility of promptly affording relief by making one such incision, since this may perchance be sufficient.

However, the observation of the writer has been that this method is largely a "hit or miss" proposition, and that many of these cases which are relieved following an incision of this kind are rendered so, not necessarily by reason of such an incision, but often by a spontaneous rupture of the abscess. Indeed, there is no doubt but that most of these cases would go on to ultimate recovery without any surgical interference whatsoever, either by spontaneous rupture, absorption, or by a combination of these two efforts of nature. But an expectant form of treatment entails needlessly prolonged suffering, with a possible risk of aspiration of the ruptured abscess contents into the larynx with sometimes fatal results.

Again, there is a further uncertainty in the use of the usual method, in that we may be misled into believing that a point of bulging at the upper part of the anterior pillar contains pus, when such a projection is often caused by the tonsil itself being pushed forward and inward by the pus external to the tonsil. And other objections have been properly advanced to the performing of incisions in the soft palate or pillars on the ground that the operator may wound vessels of some size, or injure muscular tissue, so that the after scar will interfere with the action of the palate. Great hemorrhage sometimes follows such a practice.

It is rather surprising that in most all text books advice is given to cut freely through these important structures, and that few of them suggest that a more practical method be used except as a secondary consideration.

The term peritonsillar abscess implies essentially an abscess situated immediately around or exterior to the tonsil, and it is in no sense a misnomer. The only space in which such an abscess can begin is between the tonsil and the structures of the throat with which this organ is in intimate relation; namely, the pillars of the fauces and that part of the lateral wall of the fauces formed by the

superior constrictor muscle. Therefore, it follows that pus will first be found somewhere in a space bounded by these tissues, either just external to the tonsil or in the anterior, posterior or superior tonsillar fossa. It may, and usually does, unless attacked early, extend to neighboring parts, but it obviously cannot be drained so well through those tissues secondarily involved as at the first point of development.

In some cases with extensive swelling it would of course seem advisable to drain at both the primary and secondary foci. And a recent case comes to mind in which the swelling was so great and the landmarks so obscured that it was only practicable at the first sitting to open through the soft palate alone at some distance from the primary location. But if we can choose the point to open, there is no doubt but that in most cases the immediate peritonsillar region is the logical point to select, and that this region is most easily and directly entered somewhere between the tonsil and pillars, whether above or to the side of the tonsil.

In this connection, the late Dr. Ballenger[1] of Chicago some years ago devised an operation by which the tonsil is pulled toward the mid-line of the throat and forward, and after making an incision to separate it from the anterior pillar, as though the tonsil were to be removed, a blunt dissector is passed between the tonsillar capsule and the superior constrictor muscle until the abscess cavity is reached. He states that this method never fails to evacuate the pus, whereas others are inaccurate and are often attended with failure.

Likewise, Carmody and Finnoff[2] have recently described their method of opening such an abscess, which they claim is in the supratonsillar fossa in the great majority of cases. They object to the use of a knife, but use a forceps, which may be opened to spread the wound after introduction. It is plunged between the pillars at their junction above the tonsil. They state though that pus may not be found in the supratonsillar fossa, and that in this case the forceps should not be withdrawn but made to sweep down into the posterior fossa, and failing to find it there, into the anterior fossa. Some authors have suggested reaching the abscess by entering the supratonsillar fossa with a knife.

Theisen[3] advocates dissecting backward until the capsule is reached and removing the upper lobe of the tonsil, which leaves a large triangular opening for drainage.

And H. A. Barnes[4] recommends tonsillectomy for the cure of quinsy during the acute attack. However, such radical forms of

treatment have not received much favor as yet, not being in accord with generally accepted surgical principles.

Of these less radical methods, Ballenger's would seem to offer the best promise of draining the pus cavity at the most dependent part, and it can be said that it is certain of results if the technique is properly followed.

But, under local anaesthesia this amount of manipulation, especially the traction on the tonsil, in my hands has proven to be very painful in these cases, even when cocain is freely injected into the peritonsillar tissue. And there is some objection to giving a general anaesthetic. Thomson[5] of London states "in opening a peritonsillar abscess it is dangerous to use any general anaesthetic, even nitrous oxide or a slight degree of chloroform anaesthesia."

A consideration of these points has led me to try, under local anaesthesia, the simple expedient of inserting a semi-sharp tonsil dissector between the anterior pillar and the tonsil, working it outward and slightly backward until it has reached the outer aspect of the tonsil, and then pushing it further backward and somewhat upward between the tonsil and the superior constrictor muscle. No other instrument is used except a tongue depressor; and as for the dissector, I have found Carpenter's to be very well suited to the purpose. I have of late come to prefer the sharper of the two submucous elevators of Freer, which is as a matter of course only semi-sharp, for this operation, having found that the shape and comparatively narrow width of the blade of this instrument favors an easy introduction.

If care is taken to keep the dissector in close contact with the tonsil during the procedure it will usually pass between the capsule of the tonsil and the muscle without difficulty. Should pus not be encountered directly the instrument can be manipulated further upward or backward.

In some instances, and as might be expected in incipient cases, pus may fail to appear at all; but in this event it is usually forced out shortly afterward through this opening by the action of the muscles of the fauces. Of course, one may fail in any case if the dissector is not introduced far enough.

In using this method it is of advantage in some stubborn cases to later reinsert the dissector one or more times into the cavity to greater facilitate drainage. This is as a rule but slightly painful after the first time, even when cocain is not applied.

I usually prepare the field by swabbing a twenty per cent cocain solution on the tonsil and anterior pillar, and between them if

possible, though a greater degree of anaesthesia can be obtained by also injecting a few drops of a weak solution into the peritonsillar region.

After having used this operation for some time, I have found it to be less painful than the others I have tried; it is simple of performance, is attended with little bleeding, and usually affords prompt drainage of the abscess. But whichever method we may decide upon as being most applicable to a given case, let us at least endeavor to base such a decision upon sound anatomic and surgical principles.

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Severance of the Chorda Tympani Nerve During Paracentesis in Acute Otitis Media. I. SOBOTKY, *Boston Med. and Surg. Jour.*, Feb. 14, 1918.

A woman of 66 suffering from acute otitis media (right ear) was subjected to paracentesis of the tympanic membrane. Two days later she was examined again and the paracentesis opening was plainly seen, somewhat anterior. She complained of inability to taste and of a feeling of numbness over the right side of the tongue. Probe examination showed insensibility to touch. Tests made with solutions showed absence of taste on the right anterior one-half to two-thirds of the tongue, except possibly at the very tip. Taste was present on the right posterior one-third. Otoscopic examination of the left tympanum showed a thin membrane and the chorda tympani nerve as a faint line situated lower than normal. It may be assumed that the chorda tympani on the right side was also abnormally situated and was severed during the paracentesis. ED.

PRESIDENTIAL ADDRESS BEFORE THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

DR. T. H. HALSTEAD, Syracuse N. Y.

Fellows of the American Laryngological Association:

Because of the high character of this Association and of its membership, it is a great honor to be chosen your President during this Jubilee Year when the Association is celebrating its fortieth anniversary. While feeling keenly my inadequacy and my inability to measure up to the standard of the men famous in Laryngology who have preceded me in the office, I am deeply appreciative of the honor ,than which there is none greater in our special field of medicine in this country.

The present meeting will prove memorable in the history of this Association. The men who are active in daily practice in their communities and in these annual gatherings are meeting today the old war horses who not only founded this Association but put Laryngology in America on a foundation so solid that it is respected as one of the great specialties in medicine. Forty years is not long in the history of medicine, but it comprises pretty much the full period of modern laryngology. It is certainly an occasion long to be remembered when the founders come back and mingle with those who are carrying on the work they so auspiciously began when they were in the early youth of their professional careers. Some of the younger members may not be familiar with their faces, but their names and their work are known to us all and are the subject of constant reference in the scientific discussions and social intercourse of our annual meetings.

Thanks to the effort of our ever youthful and deeply beloved fellow, Dr. Delavan, the program of this first day will afford us all an opportunity to see and hear again and renew our friendship with those honored fellows.

One fellow, whom we have all known and loved, will be especially missed from our number this year. One of the organizers of the American Laryngological Association, Dr. E. Fletcher Ingals, remained to the last an active fellow, furnishing last year one of the most valuable papers of the meeting. He was rarely absent, seldom, if ever, failing to contribute a paper to the transactions and was listened to with closest attention in the discussion. Of enor-

mous experience and broad knowledge, great resourcefulness, full of initiative, possessed of the genuine surgical sense, endowed with an inventive genius and with a rare skill in telling what he knew, he was one of the great constructive laryngologists of this country and of the world. He was an educator and a producer. With it all he was one of the most modest, most genial and most lovable of men. Of fine personality, splendid appearance, he never grew old but seemed to be one of those men who appeared younger each year because his sympathies and activities were always with those who were doing things. He with our active fellow, Dr. Samuel Johnson, who was also a founder, was probably known personally by every member, past and present, of this Association.

We are glad to have with us this year Dr. Birkett, whose last attendance at a meeting was in 1914. Shortly after returning home from that meeting his country became unexpectedly embroiled in the war, and on a call going out for medical men, he was quick to respond to his country's need. Ever since, now nearly four years, he has been in active service, a few months in Canada, but mostly overseas in England and France, being of invaluable assistance to the Canadian and Allied forces, acquitting himself, like so many of his countrymen with great honor and distinction, steadily rising to highest rank and responsibility. Each fellow of this Association feels a personal pride in his achievements. Col. Birkett is with us now only because he was invalided home, and we all wish for him a speedy recovery to his former health and usefulness.

You may be interested to know that of an active membership of 82, there are in active military and naval service of the U. S., 25 men, or thirty per cent., which is a very creditable showing considering the average age of its fellows.

A DIAGNOSTIC CLINIC FOR PAY PATIENTS.

In considering various topics for this address, it seemed that this was an appropriate occasion to discuss a subject which has been occupying the thought of the speaker much of the past several months when not thinking and reading of the war. Indeed, it is a subject which has been brought forcibly to mind through the experience gained in co-operative work with other physicians in doing medical work in connection with the examination of recruits and candidates for the aviation section of the army and on a medical advisory board. It is a subject which must be of interest to all physicians as well as to the laity and while the speaker may be unable to present anything new, yet he hopes to stimulate an in-

creased effort and aid in solving a very grave defect in the present system of private medical practice.

It is well recognized by the medical profession and by the intelligent lay public that a serious defect exists somewhere along the line. Organization of hospitals for the care of ward cases has always been better than that for the care of private patients. Dispensaries have been well organized for the free ambulatory cases, and team work or group work is well arranged for. The private patient, who pays the regular medical fees, does not receive as satisfactory service, very often, as the patient who goes to the dispensary or the hospital ward where all medical service is free. In the case of the charity patient, the service of as many physicians, specialists or surgeons as may be required, the use of the laboratories, clinical or X-ray, as freely as necessary, are all at his command. Hospitals and dispensaries are supported and endowed primarily for this class of patients. When it comes to the private patient, however, the element of expense to him enters immediately into the consideration of what and how much shall be done. It frequently happens that a diagnosis cannot be made because of the expense involved in calling in as many physicians as the case really demands.

Diagnosis is the foundation of treatment and before the latter is undertaken, the former must be made as carefully and as accurately as possible. To do this in many more or less obscure cases, as many as a dozen specialists and consultants as well as the full use of the most complete clinical laboratory and X-ray department may have to be brought to the elucidation of the case. The cost of all this, to the great majority of the middle class, who constitute at least 90% of private patients, is prohibitive. To the other 10% who can and are perfectly willing to pay for a diagnosis whatever the cost may be, there is lacking the organization in the present system of medical practice, to provide them with this in an efficient way.

In the days of an earlier civilization, before the Christian era, in ancient Egypt, where the population was largely concentrated in the numerous cities of that country, it was the custom and the medical practice of that day, that for each disease, and for each separate region of the body, there was a medical attendant, i. e., the practice of medicine was chiefly by specialists. Specialism in medicine was, in all probability, brought to a finer point in ancient Egypt than it is now, but we are rapidly approaching their system. Unquestionably the greatest progress in medicine has been made

as the result of the work of those physicians who limited themselves in their practice or devoted themselves to special laboratory and experimental work, and is a justification for specialism if such be needed.

Modern specialism goes back to about the middle of the last century, but there have been specialists, without doubt, throughout all the ages. The surgeons, the obstetricians, the general practitioners, who practiced neither surgery nor obstetrics, were all of them specialists in their day, their specialties being broad, it is true, but comparing the accurate knowledge of their time and of this, they limited themselves as much as does the modern specialist. The great increase in knowledge in medical science, in chemistry, electricity and physics, together with the drifting of population to the cities, has caused the rapid growth of specialism in medicine during the past twenty-five years.

Including the broader branches, such as internal medicine, general surgery, pediatrics and obstetrics and the more limited specialties, such as ophthalmology and proctology, there are not less than 22 to 25 well defined and generally recognized specialties in medicine. In an American city of 150,000 population, each of these branches will be found to be represented by from one to five or ten physicians, limiting themselves more or less rigidly to the specialty adopted. While the great majority of physicians are in general practice, yet nearly all exclude from their practice certain classes of cases, while many of them are qualified more particularly along one or two specific lines. Many general practitioners develop into general consultants, i. e., men who are consulted by their patients because of their known broad and general knowledge of medicine and because they can be trusted to direct the patient when direction is advisable, to the proper specialty for further assistance, at the same time continuing the relation of supervising physician, throughout the whole management of the case. This class of physician is rapidly increasing in number and is being appreciated by an ever growing clientele.

A few years ago most patients who consulted specialists were referred by their own family physician, but now the great majority come of their own initiative, knowing of the reputation of such a physician for a special class of diseases, or even because of his supposed skill in relieving certain symptoms. The result is that frequently a patient will consult a number of specialists in different branches, each for the relief of a different symptom, or sometimes for the relief of a single symptom, headache for example. To each

specialist consulted, chief emphasis is laid on the symptom or the complaint this doctor is supposed to be especially interested in, while other symptoms, which are perhaps more important in arriving at a correct diagnosis, are either entirely omitted or glossed over as being insignificant, the result being that the patient does not describe her complaint comprehensively to any one of the numerous specialists she may consult. Disappointing results, both in diagnosis and treatment, are often the result of the patient's painstaking and expensive effort to find relief through this kind of search. Each specialist is looking for a cause in his special field, but is handicapped through the lack of knowledge of what is present in other parts of the body. He often mistakes cause for effect and vice versa or may overestimate the importance of a minor complaint, overlooking the predominant one. Several causative factors may be present the question being as to which is dominant. Unfortunately the result is often no better when the patient puts herself under the care of her family physician and asks him if he cannot himself make the diagnosis, to at least send her to some one or several specialists who can aid him. In the great majority of cases, it may not be necessary for the patient to consult any physician other than the first one, but very often he will find it advisable to refer the patient to a selected specialist to clear up a moot point or apply special treatment.

However, there are a certain number of seemingly obscure cases which the most intelligent general physician cannot diagnose and he must refer his patient to at least one, and before he is through, frequently to eight or ten different specialists in different branches of medicine, only then to fail in reaching a diagnosis, even after months and sometimes years have been spent in sending the patient to this man and to that in this city and in that state. After it is all over, and the case has drifted from his care, he is surprised to learn some day that his patient is well, the cause having been discovered and removed perhaps, by a dentist who extracted a few teeth following an X-ray examination made at the suggestion of a lay friend or perhaps that the patient had consulted a specialist who had not examined her at the time he was in charge of the case, there being no local or definite symptoms pointing to trouble in this specialist's domain and yet the source of the whole obscure illness was easily discovered when the right man was seen or more likely when the right region was investigated.

The family physician, or the general practitioner in charge of this case, was competent, careful and used good judgment in select-

ing the consultants or the specialists to see his patient. He received reports from all of them, the reports were clear but the individual specialists never got together and consulted with him, and consequently no one of them ever saw more than a small part of the whole picture while the family physician, the only one who heard all these reports, got them at various times, weeks and months between some of them, so that he failed to grasp the significance of much of the information supplied him. Consequently he failed in diagnosing, what seemed a very obscure case, but which was in reality a very simple one, once the light reached it.

It is not to the credit of the medical profession that patients with obscure or complicated disease should be compelled to drift about from one physician to another in search of a diagnosis, when the diagnosis might be made in a very short time provided the patient were properly and skillfully referred to the proper man or men, because the diagnosis is finally made when the right man or the right specialty is reached. While the delay in reaching a diagnosis is going on, the disease is progressing, often the delay is fatal, and discredit is brought not alone upon the individual examining physicians, but reflexedly upon the profession as a whole. It is for the profession to devise a means for correcting this very grave fault in diagnosing this class of cases. A better and more efficient organization than has existed heretofore must be found. Already there are scattered throughout the country many institutions usually sanitariums where the medical staff is composed largely of specialists of different branches, who are paid salaries, the institution itself being a corporation organized to produce dividends for its stockholders. While some of these institutions are in every way first-class and their medical staff composed of high-grade men, the great majority are not of this character and so long as they are purely commercial organizations never will be.

In order to obtain the best possible results for the patient from the medical profession in a big and comprehensive way, a method must be devised that will utilize the medical and hospital facilities that already exist or should exist in any city. The method should consider the welfare of the physicians of the community, the personnel of the hospital staff as well as of the laity. In order that it may be broad and of wide application its service should be within the financial reach of everyone needing it. While but a comparatively few patients will require its services the organization should be ready and in working order whenever called upon.

Group work, team work, is of course the essential feature of any plan. How shall this be made practical?

Hospital staffs are already organized for the diagnosis, the treatment and the care of ward cases and the hospitals afford or should afford, laboratory facilities. Team work on the part of the staff is already in operation to a limited extent among the ward or charity cases of all public hospitals. It would therefore seem that the place to put into operation a plan for group work among private and paying patients is in the hospital already established.

During the past winter a hospital staff of which the writer is a member, appreciating the desirability of establishing the group system for the benefit of private and pay patients, appointed a committee, with the writer as chairman, to study and if possible devise a system that would accomplish the object desired. The plan, outlined hereafter, is the one that was presented and adopted by the staff, ratified by the trustees and is now in operation in the Syracuse Memorial Hospital. The plan seems equally applicable to other hospital staffs and communities and is presented, more or less, in detail for your consideration.

After considering the various ideas, plans and suggestions of various men and institutions, among them Cabot and the Boston men, the Mayo Clinic, Johns Hopkins Hospital, the Life Extension Institute and many good sanitariums, it reported that in its judgment the general scheme devised, worked out and practised for nearly three years by the Clinical Club of St. Luke's Hospital of San Francisco offered the best foundation from which to build a diagnostic clinic that would best suit our particular situation and meet the local needs.

The medical staff of this hospital consists of 24 full staff members, 4 consultants and 10 assistants, 38 in all. It has an excellent well-manned clinical laboratory and a complete X-ray department with a full time non-medical technician in charge. The hospital has 150 beds.

The development of the plan met with the enthusiastic encouragement and co-operation of the board of trustees (all women) and of the progressive superintendent, without whose combined aid the plan could not have been consummated.

An important and essential feature of our plan, and one differing from that of the San Francisco St. Luke's Hospital, is that every member of the regular staff is given an opportunity to take part, in some capacity, in the work, should he so desire. This at once makes for harmony and more important, must stimulate to better work and greater exertion each staff member, and elevate

the standard of the staff as a whole. In the beginning it is voluntary on the part of each member whether or not he shall become a member of the diagnostic clinic. Apart from his voluntary resignation his retention on a group will depend entirely on the individual's efficiency, faithfulness and honesty in doing his assigned work. Failure in any of these qualifications will result in his being dropped, because every member of the group becomes vitally interested in the quality of the work of everyone connected with it, his individual reputation being involved with that of the others. In the St. Luke's system, a diagnostic group is selected from among the younger men, most of them being assistants, while with our plan the first choice is given the regular staff, after which the assistants are given an opportunity, should a vacancy arise. In our plan the assistants have something ahead to work for, but can attain a place by earning a right to it.

The organization is known as the diagnostic clinic of The Syracuse Memorial Hospital, and consist of two main groups, known as groups A and B, each serving on alternate months, and a third group, known as the auxiliary group, made up of those men of certain specialties whose services will not be required in every case.

In each of the main groups—A and B—are eight men, viz, general medicine, two (dividing the work, one each from general surgery, gastro-enterology, orthopedic surgery, ophthalmology, otolaryngology, laboratory (which includes clinical pathology and bacteriology). In the auxiliary group are neurology, proctology, urology, gynecology, dermatology, pediatrics, obstetrics, dental surgery, anesthetist and general consultants. In this auxiliary group are 20 men, any one or more of whose services are available in any case in which the group chairman thinks such service desirable. It is probable that a neurologist will be called in nearly every case and the same may be true of the urologist and proctologist. As time goes on experience may demonstrate the wisdom of adding some of the departments of the auxiliary to the main group, but in the meantime the members are just as available. It is easier to add to than to delete and it is as unadvisable to have too many men examining every case as it is to have too few. With the changes that will constantly occur as the war progresses and the staff becomes smaller, it is possible that the two main groups may become one, but for the present there are two, each group serving on alternate months.

Each group selects its chairman, who is responsible for the history of the case, and will be the first one to see and examine the

patient, after which he will arrange through the supervising nurse, for the visits of the other members of the group, together with such members of the auxiliary group as he may desire. He has the right to call any member from the other main group to examine the case and participate in the work of that case as though he were a regular member of that particular group. Through this arrangement, any member of the whole diagnostic clinic is available for service on any individual case.

The supervising nurse is a trained nurse, practised in the use of a typewriter, and as the clinic grows her entire service will be utilized for the clinic. Her duties are with the patient and the physicians of the group, while she also manages the bookkeeping and financial end of the work, and will receive her compensation from the clinic. She will take the patient's temperature, see that all specimens are furnished the laboratory, arrange the details of the physicians' visits, be present at such examinations, take notes and typewrite them and attend the general consultation, taking the minutes and transcribing them.

The gastro-enterologist and orthopedic surgeon are also roentgenologists, but the technical work will be done by a full time experienced technician who will also do the X-ray work for the other departments. His business will be to do the mechanical work, but not the interpretation of the plates.

The laboratory member of the group will be personally responsible for the blood, urine, feces, the examination of tissues and such other laboratory examinations as are required, including the routine Wasserman, the tuberculin test, phthalein test, test meal. lumbar puncture and any other special laboratory work, including bacteriological examinations that may be needed. Each clinician is responsible for the thoroughness of his own examination, making when in his judgment it seems necessary, any special examinations, such as cystoscopy, bronchoscopy, examination of ureter, should such examination be required to arrive at a conclusion. It is his business to elucidate that part of the case that comes within the scope of his special department, using his own judgment as to how much shall be done.

After all examinations, clinical and laboratory, have been completed, which it is estimated will take from three days to a week, a general consultation of all who have had to do with the case is held and if possible, a diagnosis arrived at; the physician referring the case is invited and is urged to attend and participate in this consultation. The discussion may show need for further investigation in some particular field, and if necessary, a second consulta-

tion takes place. At all events, every effort, regardless of time and expense, is spent in an endeavor to reach a satisfactory conclusion and diagnosis. When this is accomplished a typewritten statement containing the conclusions of the clinic, including the diagnosis if made, the individual findings of the different examining physicians, together with, when desired, such suggestions as to treatment that seems advisable, is sent to the referring physician. A second copy goes to the patient or his responsible relative whenever this seems desirable, a third copy being retained in the files of the clinic. A diagnosis will not be made in every case, owing to the limitations of medical science and of the individuals comprising the clinic.

The clinic is established for the purpose of rendering organized service primarily to the medical profession, secondarily to the individual patient. For this reason only patients referred by their physicians will be received for examination and then only for purpose of diagnosis, treatment being suggested to the referring physician when it is requested or seems desirable. Only cases that are obscure and complicated and apparently cannot be diagnosed by the average physician in the ordinary way will be accepted by the clinic, because its members cannot afford to give their time to cases that do not really require it. Consequently the clinic reserves the right to decline to accept for diagnosis any case which the chairman of the group believes does not require its services. It is necessary to have this reservation to avoid abuse of the functions and purpose of the clinic as well as to protect the interests of the outside members of the profession.

A flat fee, the minimum being fifty dollars and graded upwards, according to the patient's financial situation, is charged, such fees including the services of the medical men and of the laboratory and X-ray departments as well as of the supervising nurse. In addition the hospital will charge its regular room rates for time occupied. The portion of the fee remaining to the members of the clinic will be finally divided equally among those who have examined the case, to be received by them individually or be voted by them for the purchase of new equipment for improving the service of the clinic and of the hospital the latter being expected to be the disposition of the funds for some time to come. The clinic members do not expect to be compensated for their time by adequate financial returns, but do expect a real reward for their time and labor. In rendering this service they will receive themselves much knowledge and should benefit greatly through these examinations and consultations, becoming broader physicians and keener diagnosticians,

fitting themselves for a higher grade of work and service in their own practices and among their own clientele.

The hospital will benefit by the steadily increasing efficiency of its staff, and will become more useful than ever to its community. It will take a pride, as ours already has, in keeping its laboratory and other equipment up to modern requirements.

The clinic hopes and expects to receive the cordial support of the profession of its community, expecting to give a service that will be real and of substantial benefit to their colleagues and of the medical profession and to such of their patients as appear to require the benefit of a group of average physicians organized for the purpose of rendering good service in the matter of diagnosis.

The present is one of the great periods in the whole wide history of the human race. There has never before been a time when every nation, every people on the face of the earth, have all been devoted simultaneously to the same thought, the same effort, the same intense struggle for existence and survival. Our thoughts are all of war, our hopes are all of peace, but of a peace only that will spring from a complete victory over a people whose ambition it is to reduce to vassalage the other peoples of the earth. Consequently our thoughts are all centered on this war, the direct relation to which every organization and every individual has a definite place.

As an organization, we are represented on the Council of National Defense, a committee representing this and the two allied societies having been appointed a year ago. This committee was recognized officially by the surgeon general and became the sub-committee of oto-laryngology of the Council of National Defense. The three members, Doctors C. W. Richardson, H. P. Mosher and B. L. Shurly with Lt. Col. T. C. Lyster representing the surgeon general, have done a vastly important work in classifying, organizing and bringing into active work oto-laryngologists of the country. Through this committee men qualified in oto-laryngology are placed in active service where they can best be utilized as specialists. Through their knowledge personal and acquired, of the laryngologists and otologists of the country, the committee is rendering great service to the medical department of the army and navy, serving as well the best interests of the profession. In aviation work our specialty, particularly the otological part, has been called upon to do work that has been of inestimable value. In the fall of last year, our representative, Dr. B. L. Shurly, having been sent to France as the head of a base hospital unit, resigned, and by vote of the council, his place was filled by Dr. J. H. Bryan, who is now serving.

The work of the committee and its plans for the future will be presented later during this meeting by its chairman, Major Chas. W. Richardson.

The surgeon general has issued an urgent appeal for more medical men. As the army increases in size the ratio of doctors must keep pace with the general increase. There must be a quick response to his appeal, if voluntary medical service is to meet the demands of the drafted army. Doctors in all the special branches, ours included, are especially urged to come forward.

As a class, the world over, medical men are accustomed in their professional life to respond promptly to the call of duty. To do so is a part of their training; it is at the very foundation of their success. To fail to go when called is to fail in life. Each one of us should know his duty in this crisis when doctors, when laryngologists are needed at the front, in the base hospitals in France and England, on the transports, in the base hospitals, the cantonments and camps of this country. They are needed in increasing numbers and the need is urgent at the present moment. Every one of us should search his soul as he has never searched it before and must decide where his duty lies, and having decided, should immediately act, because the need is immediate. It is not every man's duty to leave his family, his dependants and his community and forgetting all other obligations, join the fighting forces. Each man must weigh the matter for himself and putting aside in the argument all question of personal advantage, come to a decision that he would be willing to subject to the scrutiny of his fellows and abide by their decision. Those who can go are to be congratulated, they are to be envied, they are the favored ones of the profession. A doctor, who in this emergency, can conscientiously go but fails to respond to his conscience and his country's call, putting his selfish profit first, is not to be envied, but is to be pitied.

Owing to the condition of the country the Councils of the American Laryngological the American Otological and the American Laryngological, Rhinological and Otological Societies voted to hold their meetings this year more or less together in order that the greatest amount of work could be done in the shortest possible time with the utmost pleasure and benefit and economy to the members of all three societies. The programs of all three show that this plan will be accomplished and I am sure we will all profit by the association. We are guests of each other and being all interested in the same cause, can learn and profit from each other.

It gives me pleasure to declare the fortieth annual meeting of the Association open for the transaction of its regular business.